

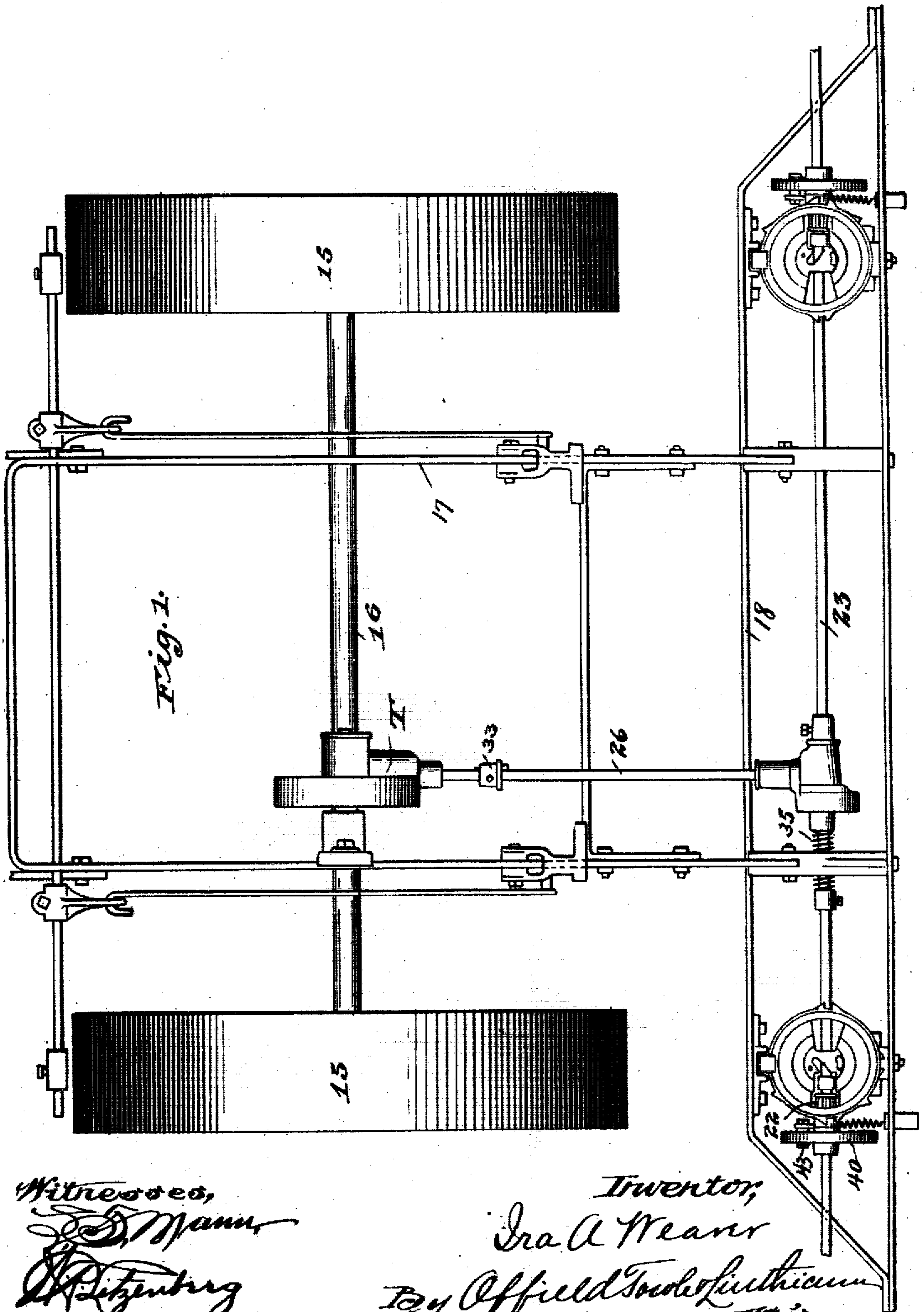
No. 827,131

PATENTED JULY 31, 1906.

I. A. WEAVER.  
SEED PLANTER.

APPLICATION FILED MAR. 10, 1904.

6 SHEETS—SHEET 1.



Witnesses,  
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*By* *Offield T. Luthian*  
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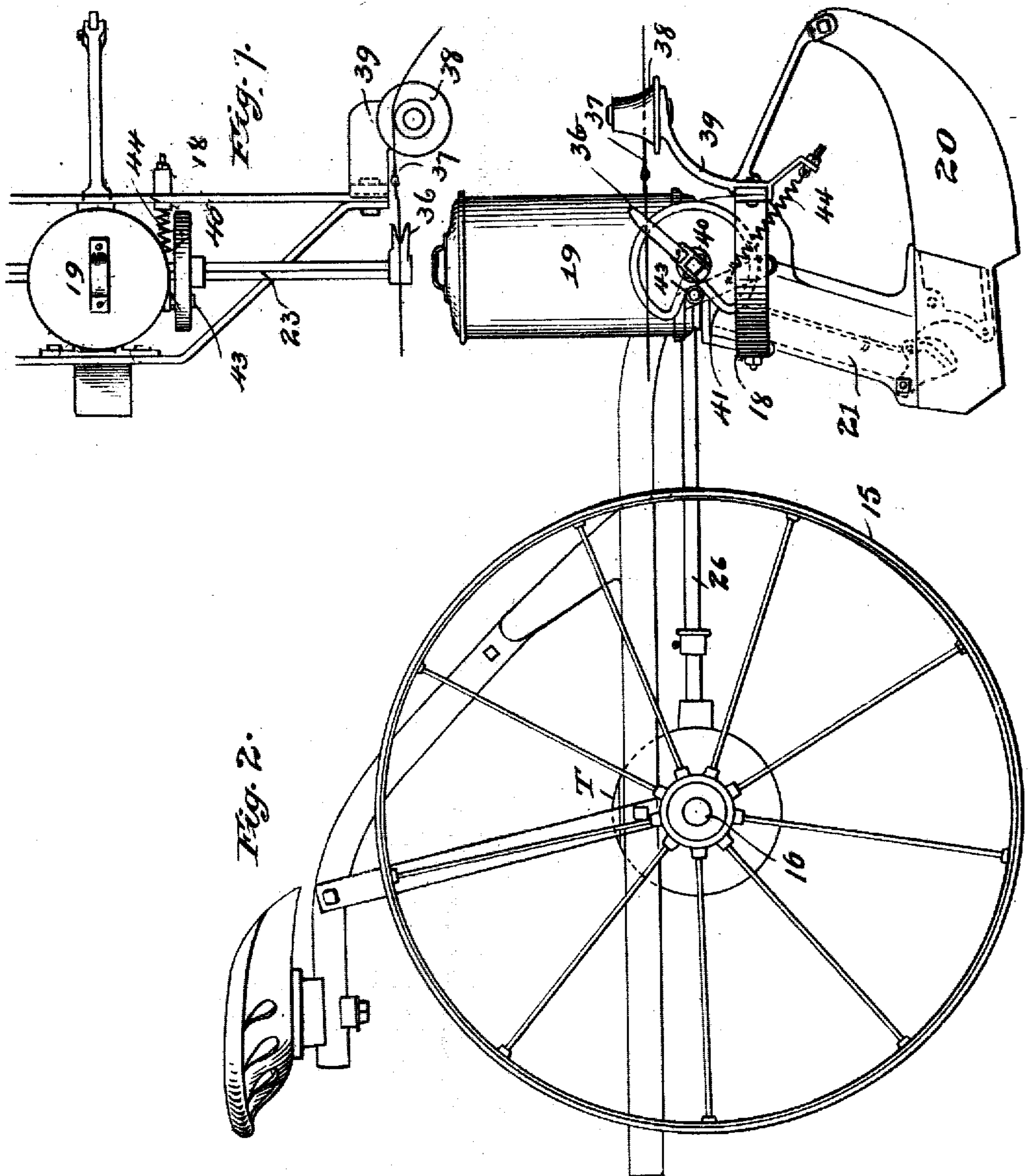
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6 SHEETS—SHEET 2



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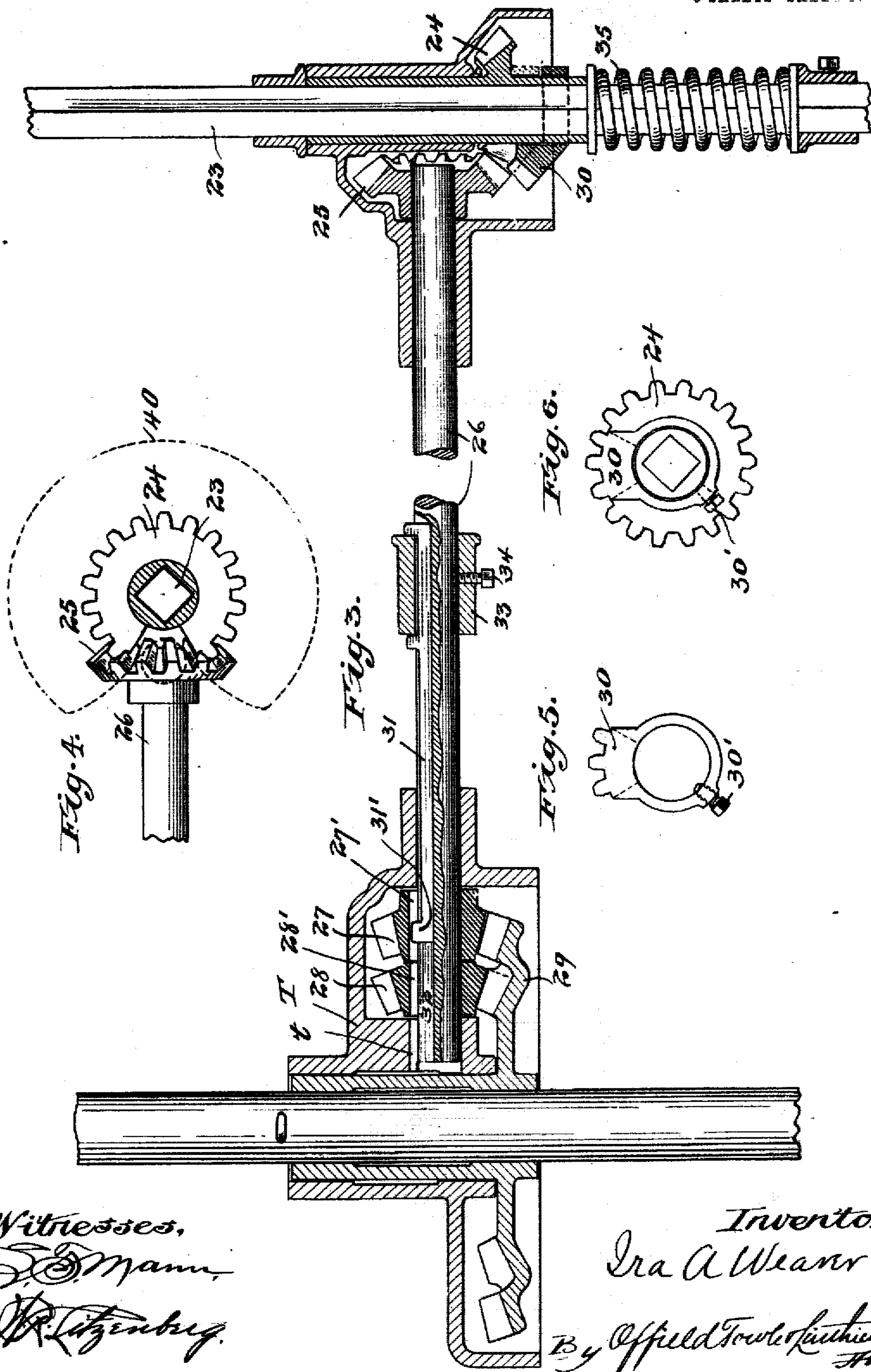
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6 SHEETS—SHEET 3.



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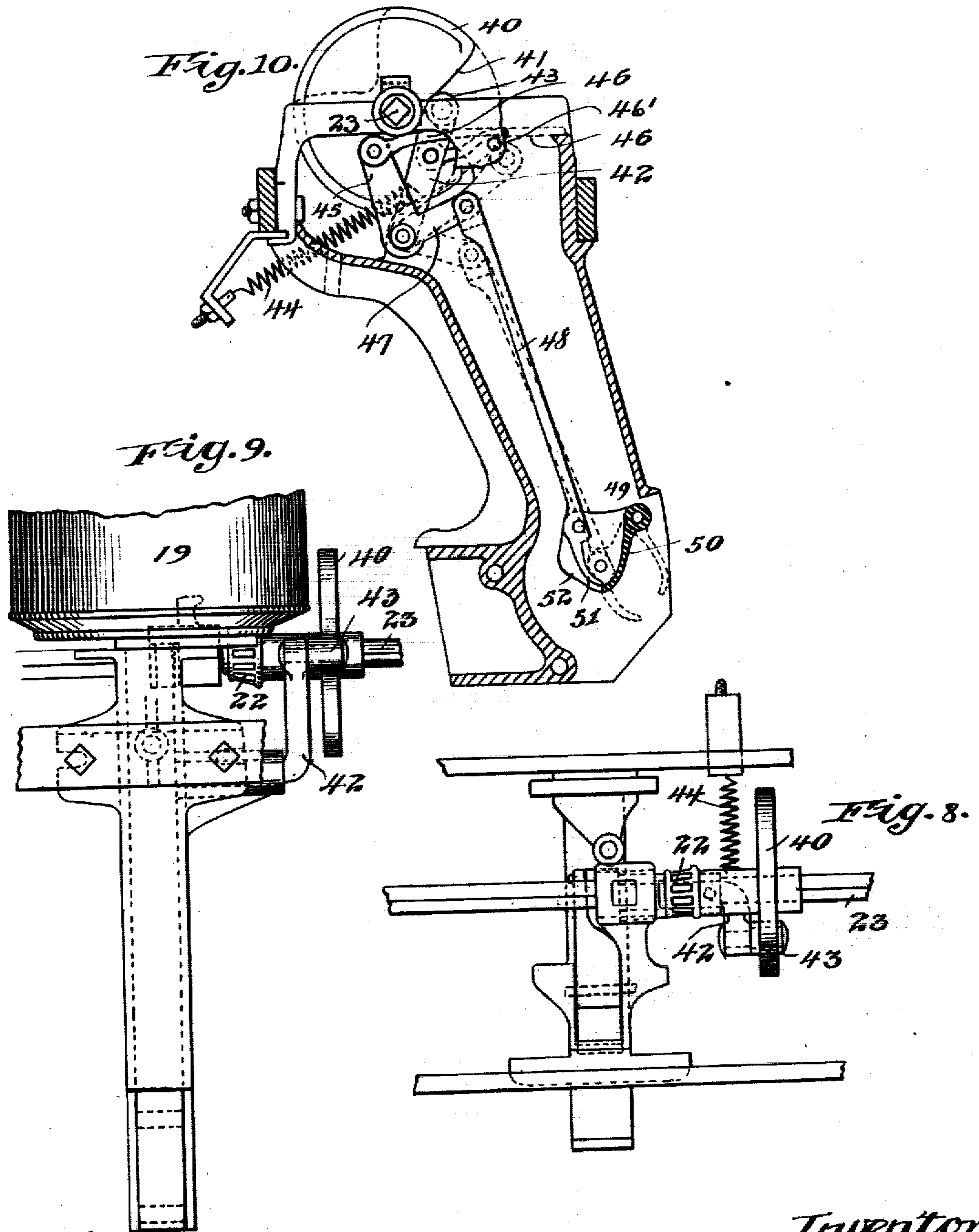
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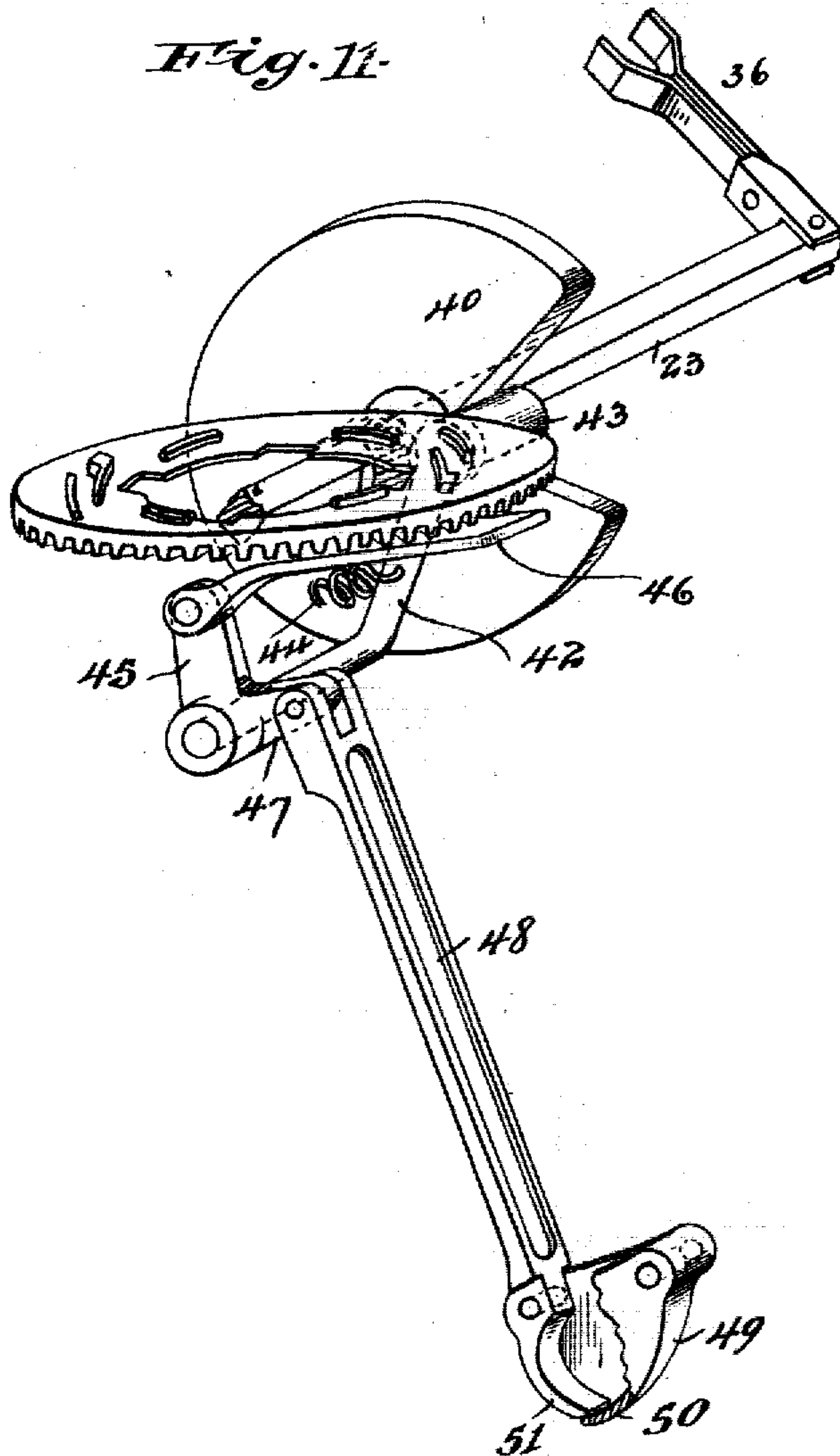
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6 SHEETS—SHEET 5.

Fig. 11.



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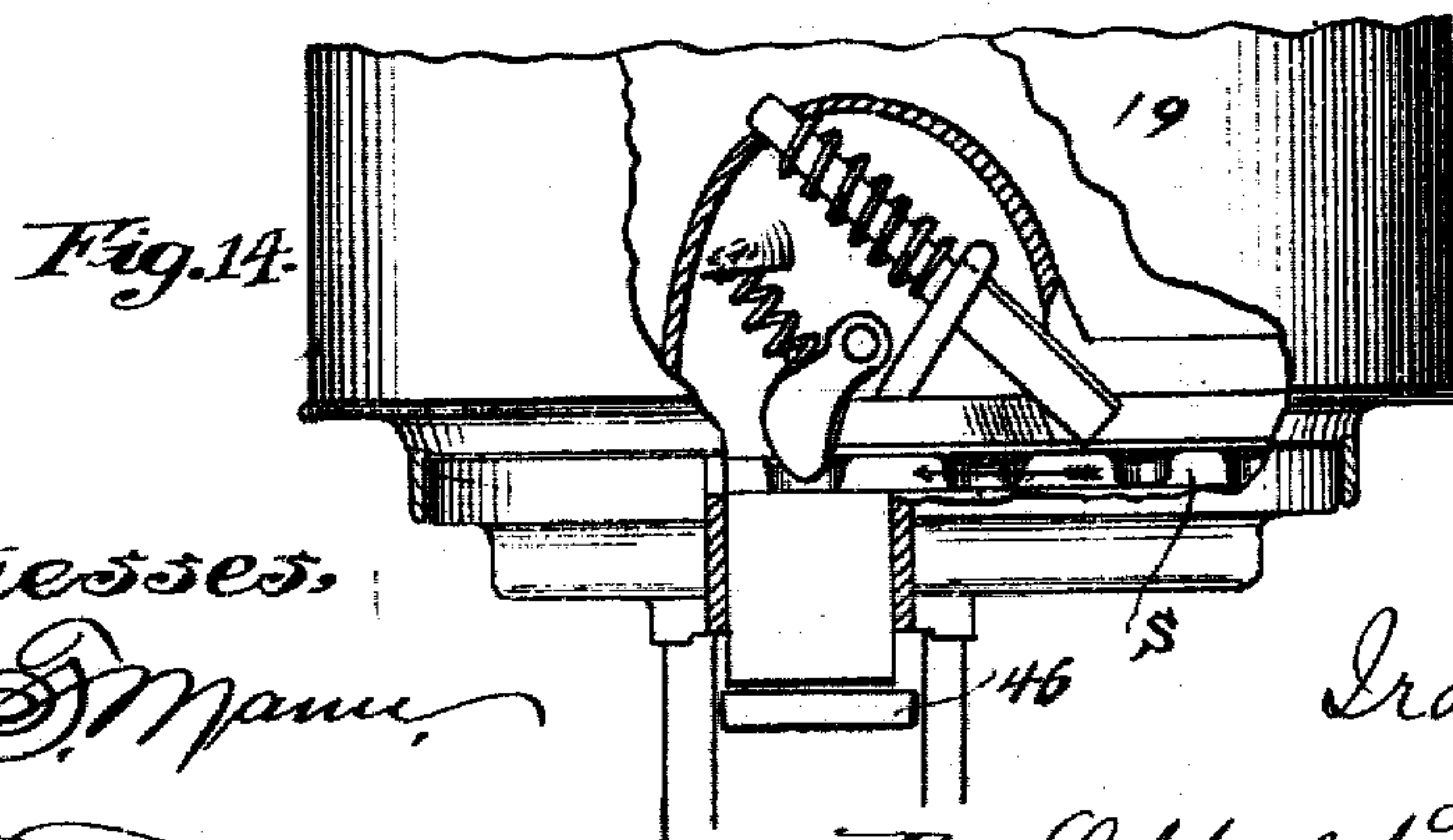
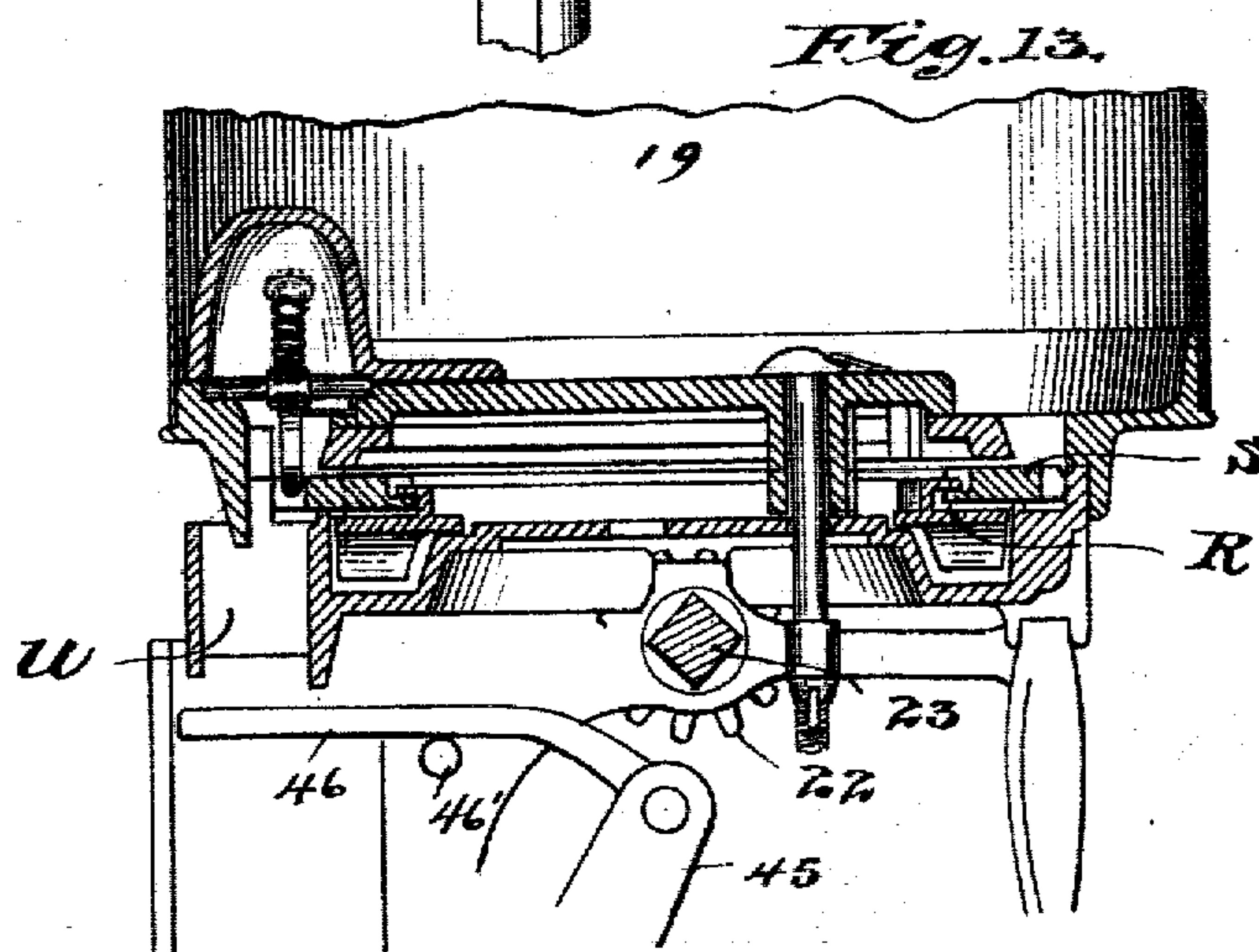
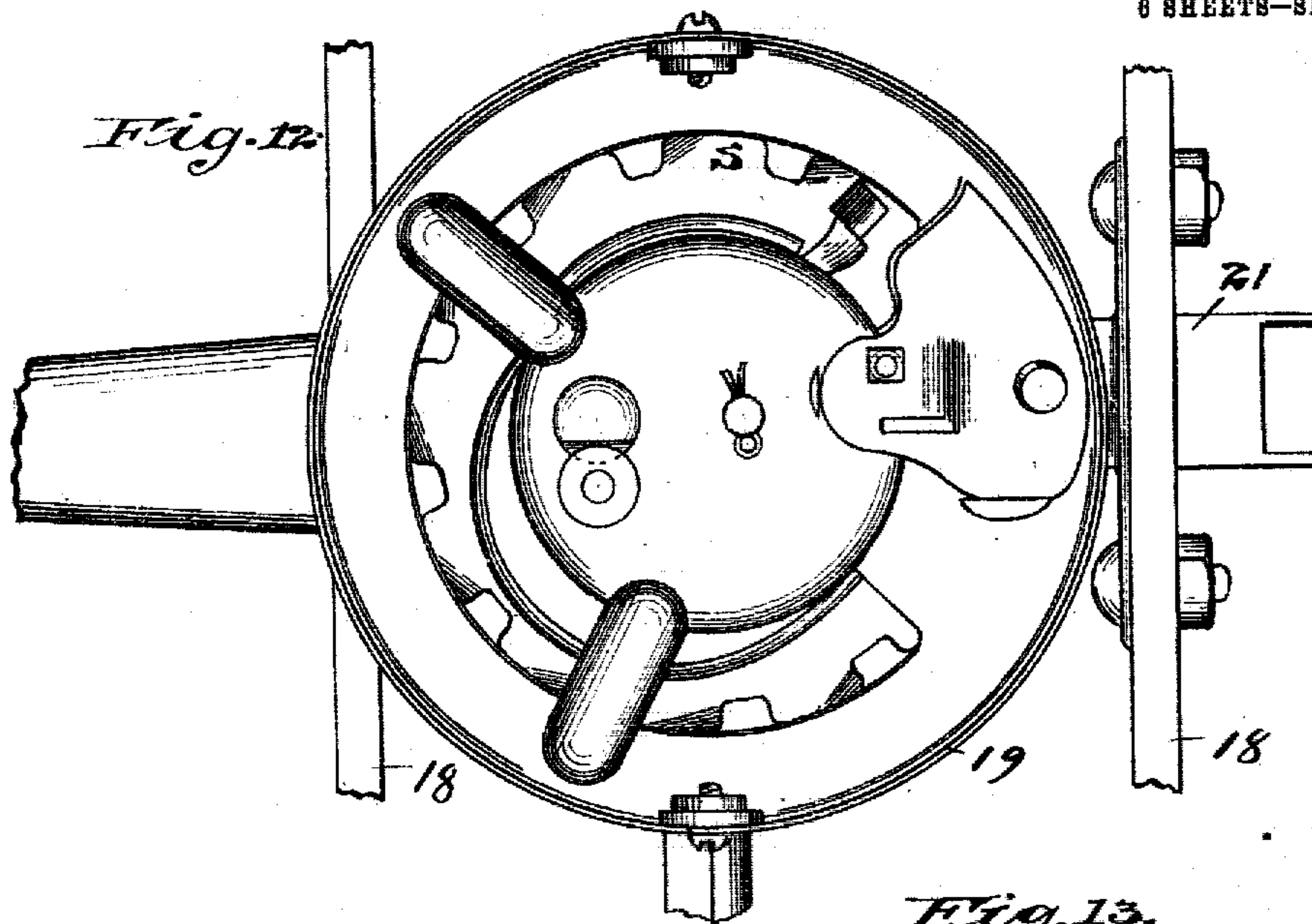
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8 SHEETS—SHEET 6.



Witnesses,

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# UNITED STATES PATENT OFFICE.

IRA A. WEAVER, OF SPRINGFIELD, ILLINOIS, ASSIGNOR TO RACINE-SATTLEY COMPANY, OF SPRINGFIELD, ILLINOIS, A CORPORATION OF ILLINOIS.

## SEED-PLANTER.

No. 827,131.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed March 10, 1904. Serial No. 187,544.

*To all whom it may concern:*

Be it known that I, IRA A. WEAVER, of Springfield, Illinois, have invented certain new and useful Improvements in Seed-Planters, of which the following is a specification.

This invention relates to a seed-planter, and more particularly to a combined check-row and drill planter wherein the seed-plates are driven intermittently, the initial movement being imparted by a check-row wire and the movement completed by power derived from the axle of the ground-wheels.

In the drawings, Figure 1 is a plan view showing the ground-wheels, the main frame, and seedbox-frame with parts broken away and parts omitted. Fig. 2 is a side elevation of the planter with minor parts omitted. Fig. 3 is a broken sectional plan showing the gearing between the axle and the counter-shaft for driving the seed-plates. Figs. 4, 5, and 6 are detail views of parts of said gearing. Fig. 7 is a plan view showing a part of a runner or front frame, one of the seedboxes, the check-head, check-fork, and tappet-wire. Fig. 8 is a plan view, partly broken away, of one end of the seedbox-frame below the seedbox and intended to show parts of the seed-plate-driving mechanism. Fig. 9 is a rear elevation showing one of the seedboxes broken away, the boot or seed-chute, and the heel of the runner. Fig. 10 is a vertical sectional elevation through the boot, intended to show the operation of the valves. Fig. 11 is a perspective view of the counter-shaft for driving the seed-plates, broken away, the check-fork, the driving-ring, a centering device, and the valve-operating mechanism; and Figs. 12, 13, and 14 are detail views showing the seedbox, the seed-plate, and their associated parts.

In the drawings, 15 represents the ground-wheels, mounted upon an axle 16, on which the main or wheel frame 17 is mounted.

18 represents the seedbox-frame, carrying the seedboxes 19, and to which frame is also attached the runners or furrow-openers 20 and the seed-chute or boot 21. In the bottom of the seedboxes are located seed-plates 50 of any desired type, these seed-plates being driven by means of the driving-ring R from a beveled pinion 22 on the counter-shaft 23. Said counter-shaft is arranged parallel with

the axle and is geared therewith through the beveled gears 24 25, driving-shaft 26, beveled gears 27 or 28, and gear 29, the latter being keyed on the axle. The beveled gear 24 is mutilated, as seen in Figs. 3 and 4, but can be made continuous by moving the gear-segment 30, mounted on the counter-shaft, into position, so that the teeth of said segment will register with the teeth of the gear 24, as clearly shown in Fig. 6. This provision is made to enable the planter to be converted from a hill-drop to a drill. The power-shaft 26 is constantly driven and may be driven at different rates of speed by shifting the one or the other of the beveled gears 27 28 into driving engagement with the gear 29, the shifting being effected by a sliding bar 31, operable lengthwise of a slot 32 in the power-shaft 26 and held in place by a sleeve 33 and set-screw 34 on said shaft. For this purpose gears 27 28 are grooved, as shown at 27' 28', and bar 31 has a tooth 31' to slide in said grooves, whereby to drive either of said gears, and when moved into keyway t in gear-housing T the gears 27 and 28 run loose on the shaft.

The beveled gear 24 is held in mesh with gear 25 by a spring 35 on the counter-shaft 23, and the segmental gear 30 has its hub sleeved on the sleeve-hub of gear 24 and has a set-screw 30' for fastening it in place. By reference to Fig. 4 it will be observed that the mutilated gear 24 is so positioned that the gear 25 may run without driving it, and consequently the counter-shaft 23 may remain stationary and the seed-plates geared thereto inactive. To effect movement of the counter-shaft, and consequently of the seed-plates, a check-fork 36 is secured on the outer end of the counter-shaft and rotates therewith, and a tappet-wire 37 is guided thereto by means of a guard 38 on a bracket 39. When one of the tappets strikes the check-fork, it carries it backward, revolving the counter-shaft 23 sufficiently to impart an initial movement to the seed-plate. This partial rotary movement of the counter-shaft also results in a corresponding rotary movement of the gear 24 sufficiently to make one of its teeth engage with the teeth of the gear 25, and the gear 24 and counter-shaft are driven thereby until the shaft has made a complete revolution, thus carrying the seed-



plate around sufficiently to deposit the required number of kernels of corn.

For the purpose of centering the gear 24 in its inactive position a centering-wheel 40 is mounted on counter-shaft 23 and has its rim or edge provided with a depression or seat 41. An arm 42 is mounted to rock in a socket on the frame (see Fig. 9) and is provided with a roller 43, which is held in contact with the rim of the wheel 40 by the spring 44. The sloping sides of the seat 41 are of such configuration that the roller 43 will, under the tension of the spring, tend to center the shaft, thus bringing the mutilated or interrupted portion of the gear-wheel 24 into right relative position to the gear 25, so that upon a slight rocking movement of the shaft 23 it will be operatively engaged with the power-shaft. The centering-wheel and the arm cooperating therewith are also made to operate the seed-valves, and for this purpose the inner end of the arm 42 has mounted therein a bell-crank, one arm 45 of which carries a cut-off or slide-plate 46, which closes the bottom of the seed-chute. The slide-plate is guided by pin 46'. Arm 47 of bell-crank 45 is pivotally connected to a valve rod or link 48, which in turn is pivoted to a seed-cup 49, having a flange 50 closing one side thereof, while a pivoted valve 51 on the link 48 closes the other side. The lower end of this pivoted valve 51 contacts with a sloping surface 52 of the inner wall of the boot.

When a tappet on the tappet-wire strikes the check-fork, it imparts an initial rotary movement to the counter-shaft, and this rotary movement is continued by the enmeshing of the gears 24 25. During the first part of this movement the slide-plate 46 is closed and the seed-cup at the bottom of the boot is opened, the pivoted valve 51 in the seed-cup pitching the grains of corn forward against the flange 50, so as to insure the delivery of the seed without scattering. As the counter-shaft completes its revolution the roller on the arm 42 again enters its seat in the centering-wheel under the action of its controlling-spring, thereby withdrawing the slide-plate 46, upon which the corn has been delivered by the rotation of the seed-plates and allowing the corn to drop into the seed-cup in the bottom of the boot, which in the meantime has closed.

It is obvious that instead of employing a single check-fork and causing a complete revolution of the counter-shaft for the dropping of each hill that two check-forks may be secured to the counter-shaft, suitable modification being made in the contour of the centering-wheel, said shaft being driven through only a part of a revolution for each deposit.

The parts are so timed that the backward movement of the check-fork is accelerated slightly over the forward advance of the planter, thus preventing any drag of the tap-

pet-wire on the check-fork. The check-fork being secured to and rotating with the counter-shaft avoids the oscillating or rocking movement requiring the return of the check-fork after each actuation and the shocks consequent thereon and enabling the simplifying of the check-fork head, the latter consisting only of a bracket carrying a simple guide-roller for lifting the tappet-wire, and consequently reducing appreciably the friction on said wire.

Attention is called to the fact that all clutch mechanism is dispensed with, the gears maintaining constant relation to each other and rolling into contact under the initial movement of the shaft imparted by the tappet-wire, while driving engagement is prevented until the shaft is initially turned through the action of the tappet-wire upon the fork.

The planter is readily converted from a check-row to a drill by moving the gear-segment into the interspace of the mutilated gear and disconnecting the spring which controls the valves, the tappet-wire of course being thrown off. The means for changing the speed is very simple and enables the planter to be thrown entirely out of action or driven at different rates of speed by the simple shifting of the sliding key on the power-shaft.

I claim--

1. In a planter, the combination with the seed-plates of a rotatable shaft for driving said plates intermittently, a check-fork carried by said shaft and adapted to be engaged by a tappet-wire whereby to impart an initial rotative movement to the shaft and seed-plates and gearing between said shaft and the wheel-axle, said gearing being made operative by the initial rotative movement of the shaft, substantially as described.

2. In a planter, the combination with the seed-plates of a driving-shaft for said seed-plates, a check-fork secured to and rotating with said shaft and adapted to impart a partial rotary movement thereto when engaged by a tappet on the tappet-wire, a mutilated gear on said shaft normally inactive, a power-shaft constantly driven from the axle and having a pinion adapted to engage the mutilated gear when a partial rotary movement is imparted by the tappet-wire, substantially as described.

3. In a planter, the combination with rotary seed-plates of a shaft operatively connected thereto for intermittently driving said seed-plates, a tappet-wire adapted to impart an initial rotary movement to said shaft, a mutilated gear thereon, a pinion normally disengaged from said mutilated gear and adapted to be engaged therewith by said partial rotation of the seed-plate-driving shaft, means for driving said pinion constantly from the wheel-axle, and means for maintaining the gearing in inoperative posi-



tion until engaged by the action of the tappet-wire, substantially as described.

4. In a planter, the combination with rotary seed-plates thereof, of a shaft for driving said seed-plates, a mutilated gear carried by said shaft, a power-shaft driven from the axle and having a pinion normally operating in the interspace of said mutilated gear and means controlled by the tappet-wire for imparting a partial rotary movement to the shaft whereby to engage said gears, substantially as described.

5. In a planter, the combination with rotary seed-plates thereof of a shaft for driving said plates, a mutilated gear on said shaft, a pinion driven from the axle and working in the interspace of said mutilated gear, means controlled by the tappet-wire for imparting an initial rotary movement to said shaft whereby to engage said gears, and means carried by said shaft to hold said gears normally in an inoperative position, substantially as described.

6. In a planter, the combination with rotary seed-plates of a driving-shaft therefor, a gear on said shaft adapted to be driven from the wheel-axle, means carried by the shaft for maintaining the gear in an inoperative position with relation to the axle-driving means, and means controlled by the tappet-wire for imparting to said shaft and seed-plates a partial rotary movement whereby the gearing is engaged, substantially as described.

7. In a planter, the combination with the seed-plates of a shaft for driving said plates, a mutilated gear carried by said shaft, and gearing connected with the wheel-axle, said gearing having a pinion working in the interspace of the mutilated gear, and a gear-segment adapted to be removably secured in the interspace of the mutilated gear whereby a constant rotary movement may be imparted to the seed-plate-driving shaft, substantially as described.

8. In a planter, the combination with a seed-plate-driving shaft having a mutilated

gear thereon, of a driving-pinion normally working in the interspace of said gear and adapted to be engaged therewith by a partial rotary movement of the shaft, means controlled by the tappet-wire for imparting such partial rotary movement to the shaft, and means carried by the shaft for maintaining the mutilated gear in an inoperative position, said means comprising a cam-disk and a spring-controlled arm engaging said cam, and means controlled by the tappet-wire for imparting an initial rotary movement to the driving-shaft, substantially as described.

9. In a corn-planter, the combination with the rotary seed-plates of a driving-shaft therefor, a gear-wheel secured to the wheel-axle, and having sets of concentrically-arranged gear-teeth thereon, a power-shaft for transmitting motion from the wheel-axle to the seed-plate-driving shaft and having a plurality of drive-pinions loosely mounted thereon, and a sliding key for engaging either of said pinions with said shaft, substantially as described.

10. In a planter, the combination with a seed-plate-driving shaft and means for driving said shaft, of a cam-disk carried thereby, a rocking arm controlled by the cam-disk, a slide-plate carried by said arm and constituting an upper valve, a second valve, and connections between said valve and said arm, substantially as described.

11. In a planter, the combination with a rotary seed-plate of a seed-plate-driving shaft, a cam-disk carried thereby, an arm controlled by the said cam and upper and lower valves controlled by said arm, the lower valve having a pivoted member and means for swinging said member on its pivot as the valve opens, substantially as and for the purpose described.

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