(No Model.)

3 Sheets—Sheet 1.

# L. EBERHART.

## SEEDING MACHINE.

No. 332,506. Patented Dec. 15, 1885.

Fig. 1.

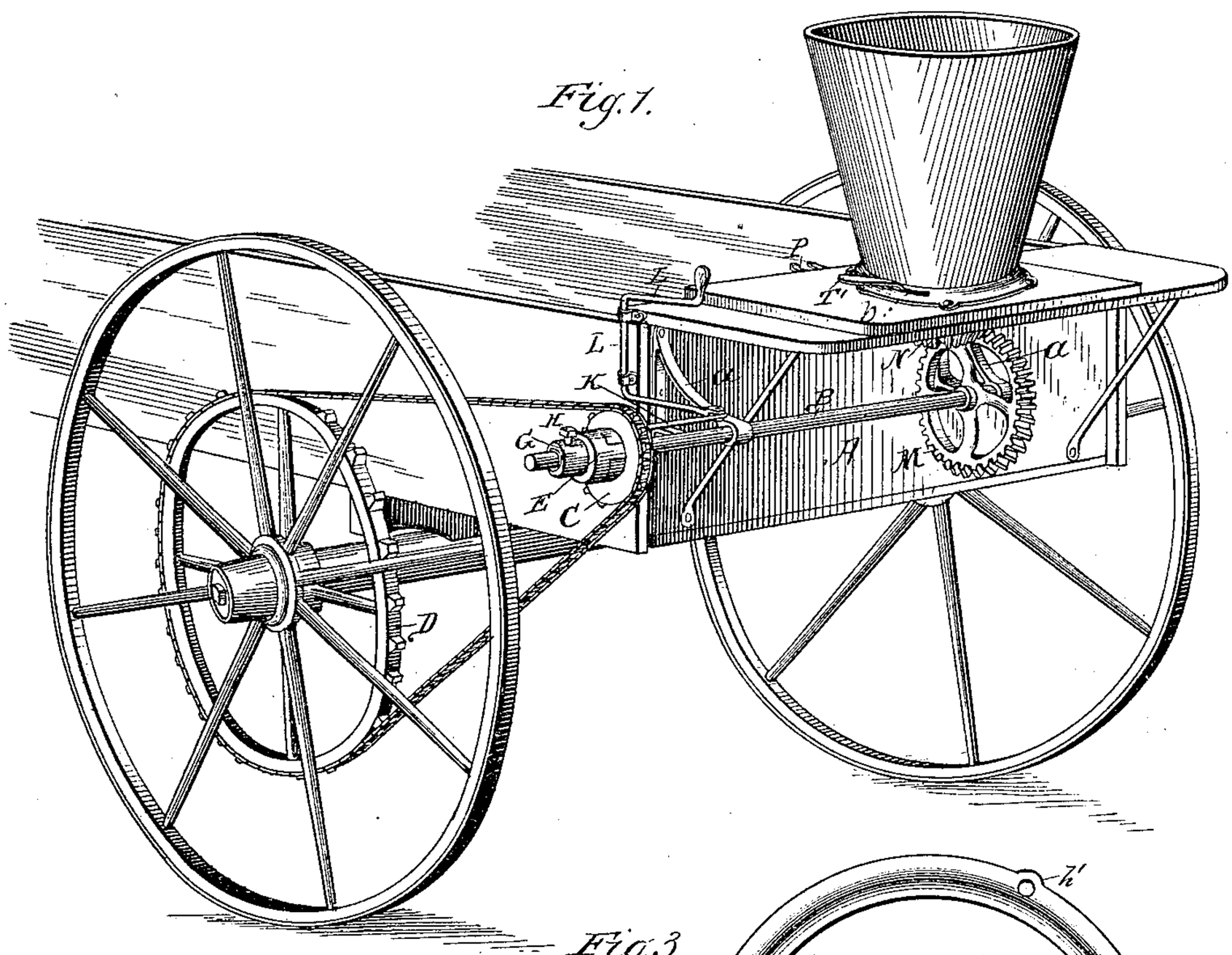



Fig. 3.

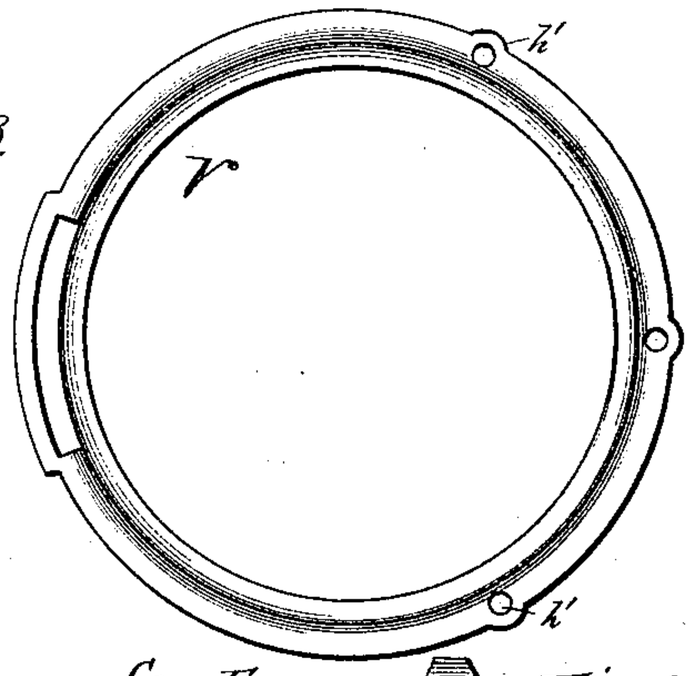



Fig. 2.

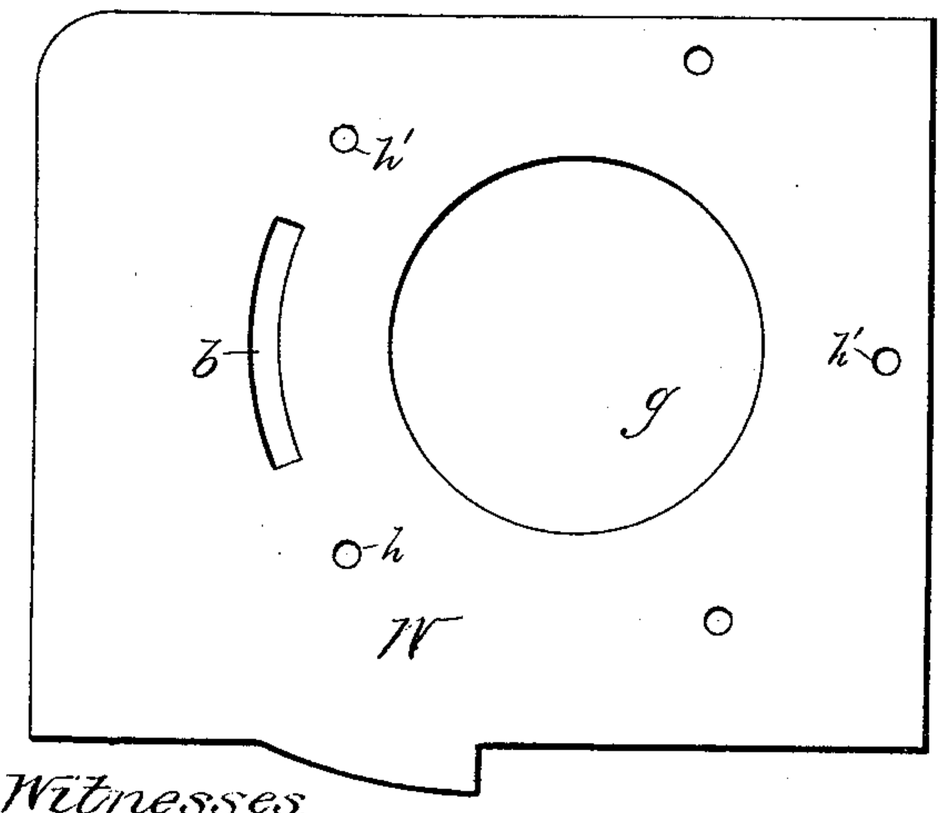
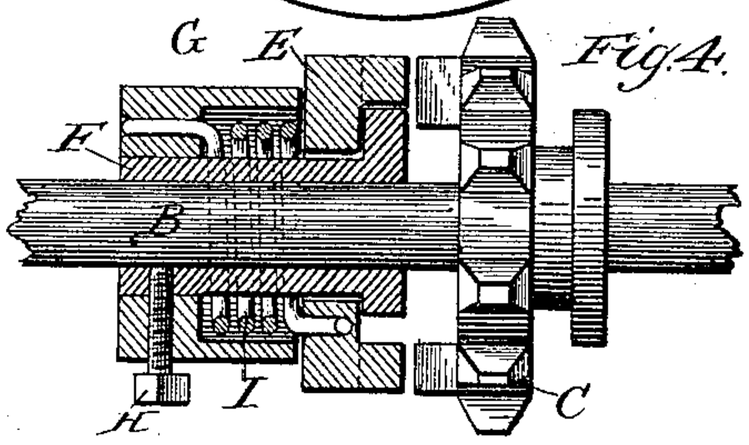



Fig. 4.




Witnesses.
Will C. Dinsmore
W. W. Elliott

By,

Inventor.
Lloyd Eberhart
Jno. G. Elliott
Atty.

(No Model.) 3 Sheets—Sheet 2.

# L. EBERHART.

## SEEDING MACHINE.

No. 332,506. Patented Dec. 15, 1885.

Fig. 5.

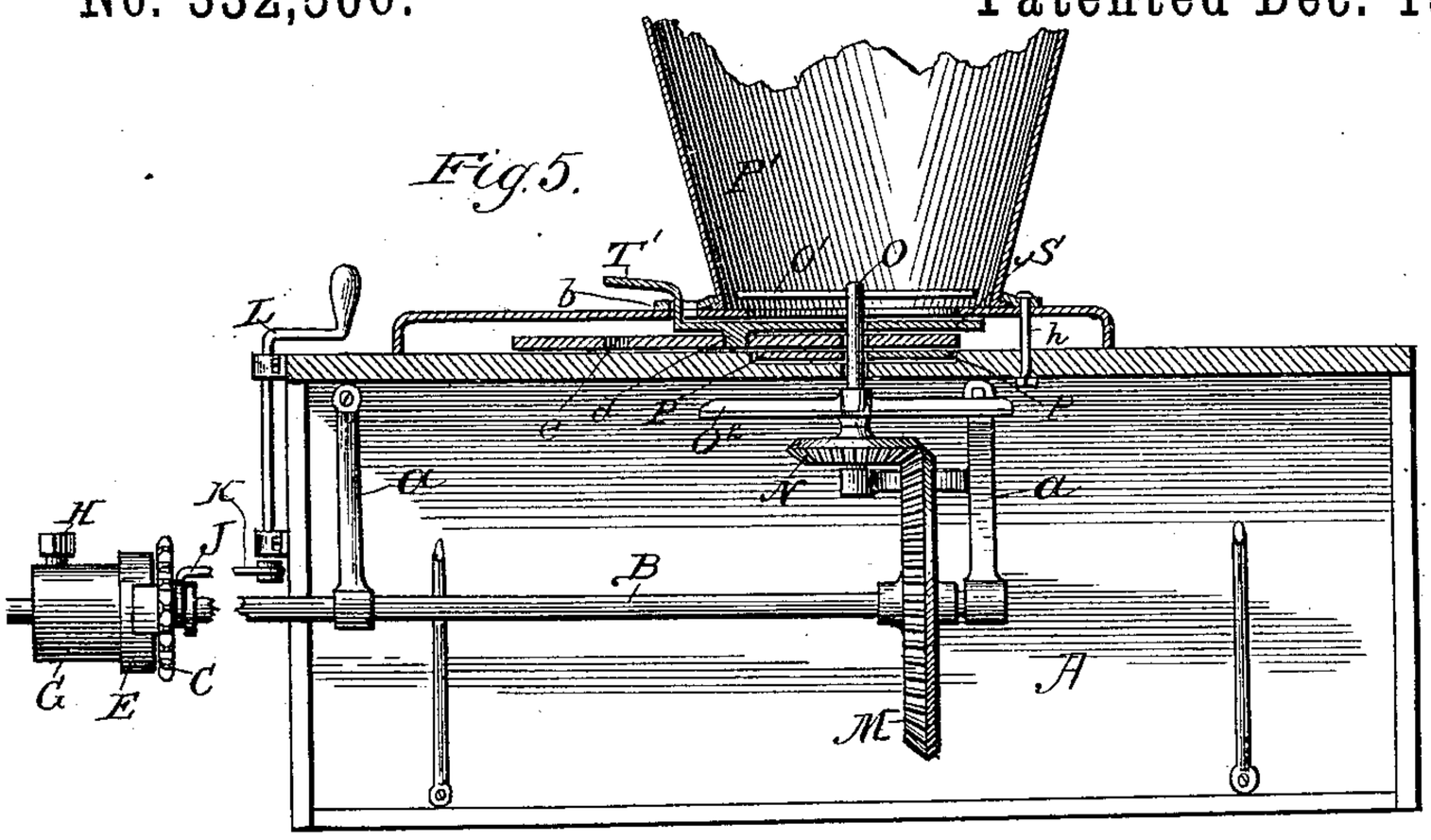



Fig. 6.

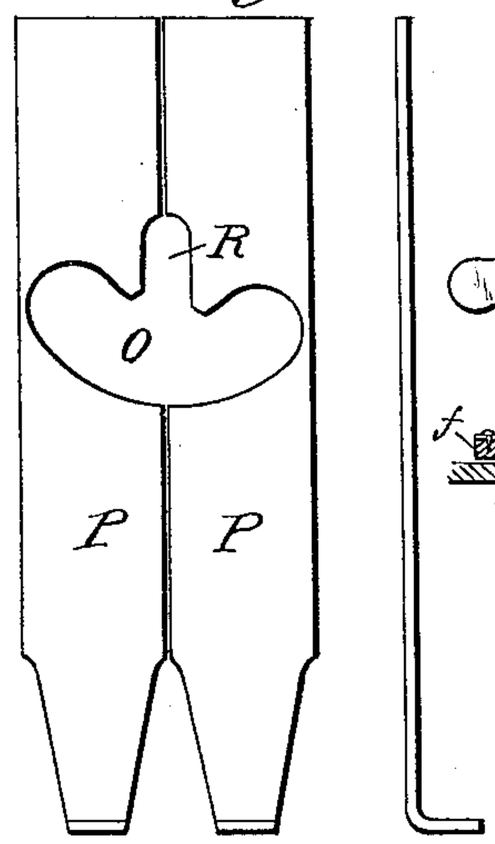



Fig. 7.

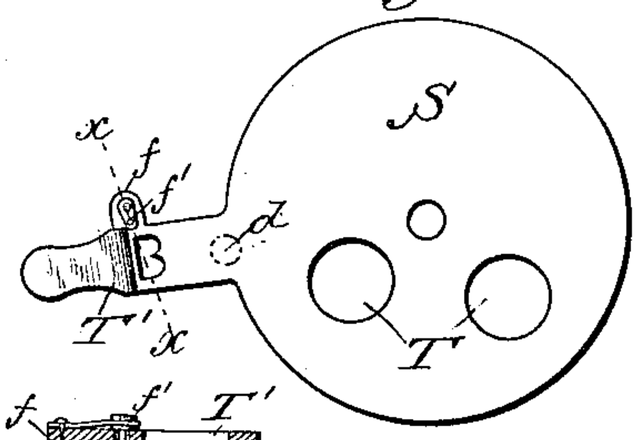



Fig. 7a.

Fig. 8.

Fig. 9.

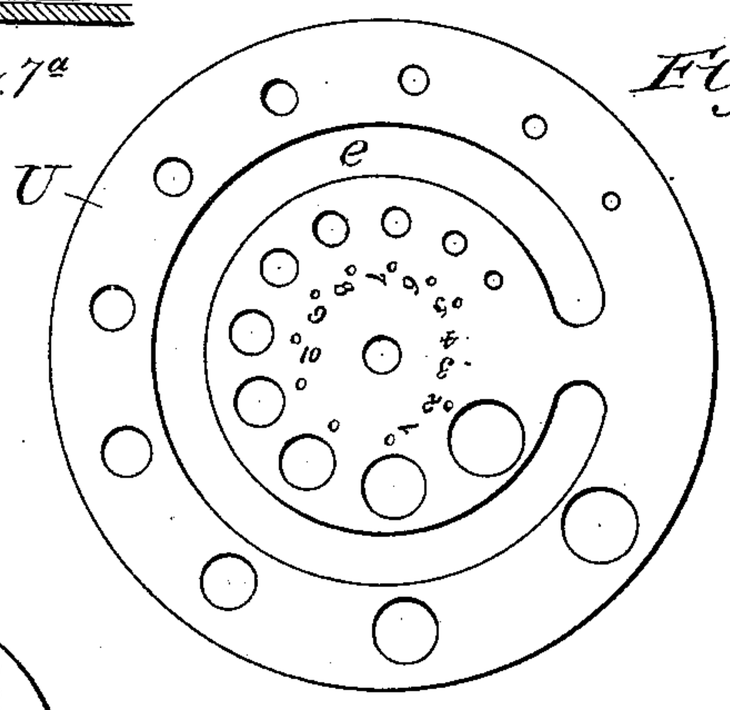



Fig. 10.

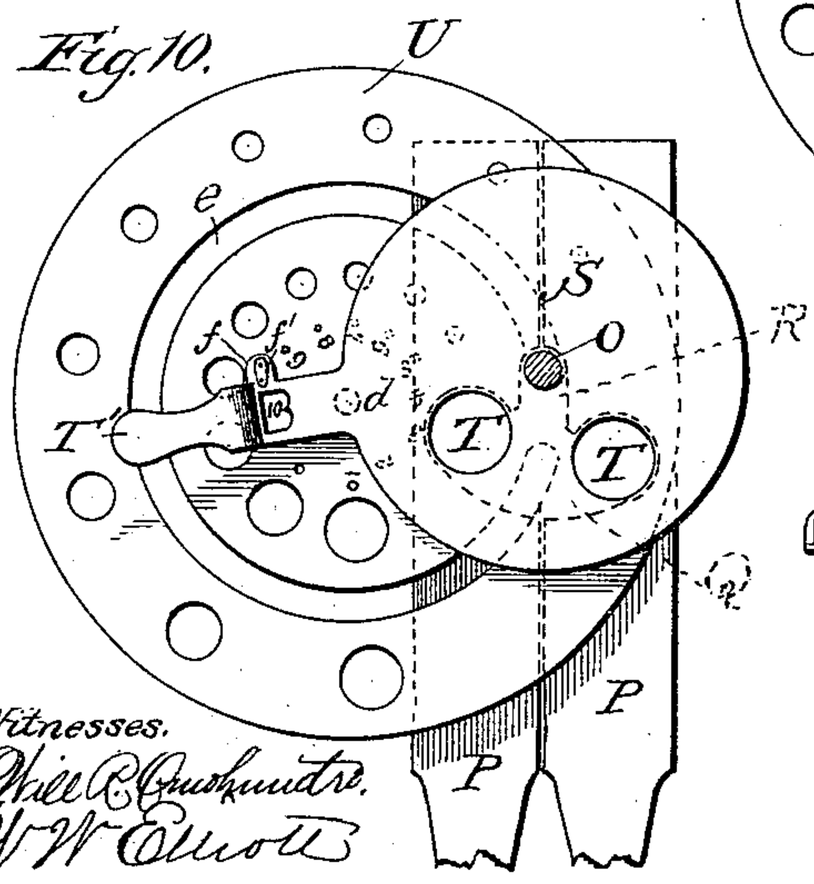
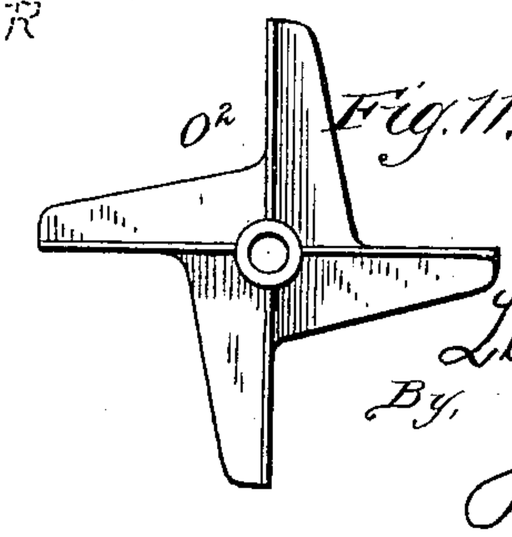



Fig. 11.




Witnesses.
Wm. R. Cruikshanks.
W. W. Elliott

Inventor
Lloyd Eberhart
By,
Jno. G. Elliott
Atty.

(No Model.) 3 Sheets—Sheet 3.

# L. EBERHART.

## SEEDING MACHINE.

No. 332,506. Patented Dec. 15, 1885.

Fig. 12.

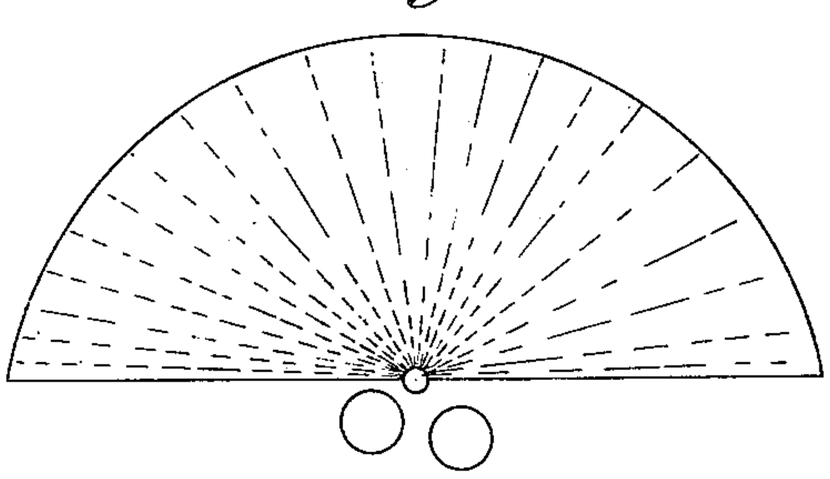


Fig. 13.

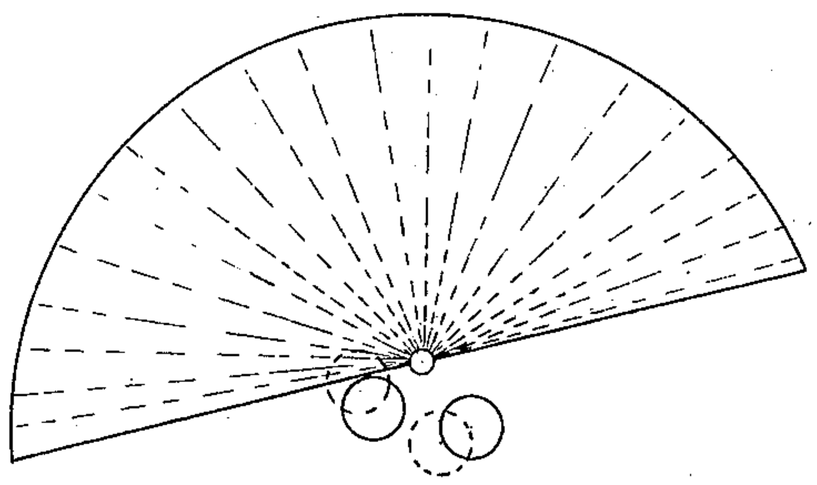


Fig. 14.

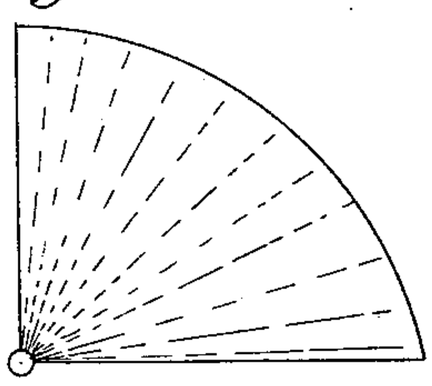


Fig. 15.

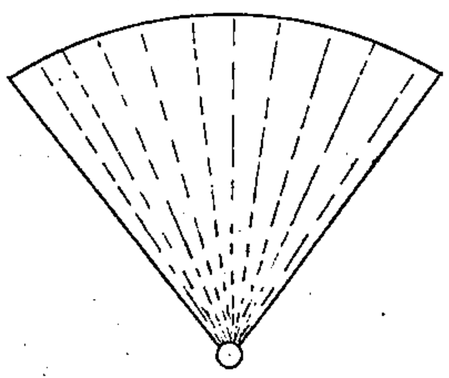


Fig. 16.

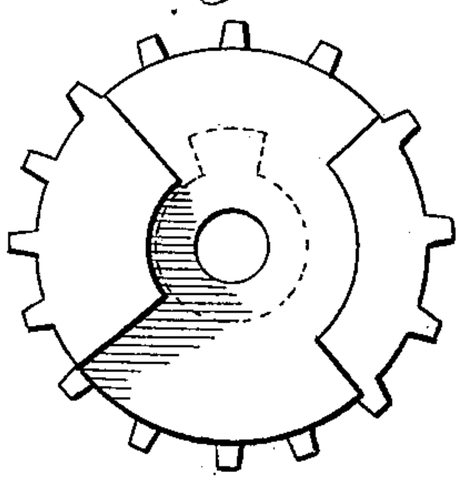


Fig. 17.

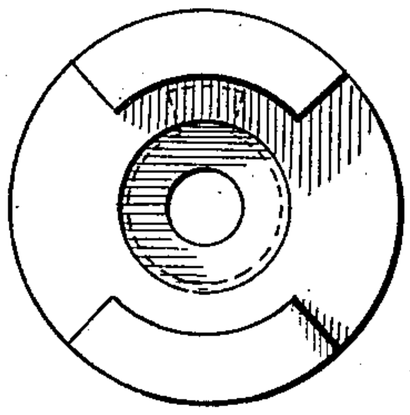
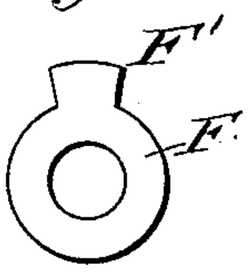


Fig. 18.




Witnesses.
Will R. Cruikshank.
W. W. Elliott

By

Inventor
Lloyd Eberhart
Jno. S. Elliott
Atty.

# UNITED STATES PATENT OFFICE.

LLOYD EBERHART, OF JOLIET, ILLINOIS, ASSIGNOR OF ONE-HALF TO IRVING D. STEVENS, OF SAME PLACE.

## SEEDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 332,506, dated December 15, 1885.

Application filed April 22, 1885. Serial No. 163,000. (No model.)

*To all whom it may concern:*

Be it known that I, LLOYD EBERHART, a citizen of the United States, residing in Joliet, county of Will, and State of Illinois, have invented certain new and useful Improvements in Seeding-Machines, of which the following is a specification.

This invention relates to improvements in seeding-machines, and more particularly to that class in which power is applied to the seeding device from one of the wheels of the vehicle to which the device is attached, and where means are provided for regulating the flow of seed from the hopper.

Prior to this invention machines have been constructed and attached to the end-gate of a wagon in a manner similar to this device, and driven from one of the wheels of the wagon, but without a device to permit a lost motion between the driving-wheels and the seeding device; hence a constant breaking of the gear-teeth ensues in consequence of the sudden or violent starting of the machine, as the fan or distributer offers sufficient resistance to cause a breakage before it acquires the momentum imparted to it by the rotation of the gearing.

The flow of the seed or other substances has heretofore been regulated by a series of sliding plates, the holes in one plate being of the same diameter, but with the holes in each plate varying in diameter from the holes of the other plates, thereby not only requiring a series of plates, but fixing the point or delivery of the seed to the fan. By such construction the dropping can only occur at fixed points, which is found objectionable, in that seed of varying weight is discharged more or less quickly, and hence an uneven or one-sided cast is made in sowing heavy seed when the machine is set for light seed, which necessitates an increase in the amount of work required to plant a given space. It is also often desirable to sow directly to the rear, and this cannot be done with the above-described construction, in which the discharge-openings are at a fixed point relative to the fan or distributer.

The object of my invention is to have a lost motion between the driving-wheels and the operating parts of my seeder in such manner that the power applied to the driving-wheels is gradually transferred to the operating parts, thereby obviating the possibility of a breakage in the gearing arising from too sudden or violent starting of the machine or wagon; to produce a seed-dropper with an adjustment for dropping varying quantities of seed; to provide means for regulating the quantity of seed or fertilizing substance to be dropped independent of the point at which they are dropped; to provide means for adjusting the point of delivery of the seed or fertilizer to the fan or distributer independent of the amount being dropped, which enables the operator to drop on both sides simultaneously, on one side only, or in the center of the fan, and to provide certain details of construction hereinafter more fully described, and shown in the accompanying drawings, in which—

Figure 1 is a perspective view showing my device attached to an ordinary wagon; Fig. 2, a detail view of the covering-plate; Fig. 3, a similar view of the ring for securing the hopper in place; Fig. 4, a central vertical section, showing the arrangement of the parts of the clutch; Fig. 5, a central vertical section through the hopper and seed-plates; Fig. 6, detail views of seed-slides; Fig. 7, detail views of perforated dropping-plate; Fig. 7ª, a detail sectional view on line *x x*, Fig. 7; Fig. 8, a side elevation thereof; Fig. 9, a top plan view of seed-plate with the dropping-plate removed; Fig. 10, a top plan view showing the relative positions of the slides, seed-plates, and perforated dropping-plate; Fig. 11, a plan view of the fan; Fig. 12, a diagram representing a perfect cast; Fig. 13, a diagram representing an imperfect cast, *h*, of heavy seed when the plates are set for light seed; Fig. 14, a diagram representing the cast with one hole closed; Fig. 15, a diagram representing a cast to the center and rear when dropping from one hole only, and adjusted for making this seat. Figs. 16, 17, and 18 are repectively end views of the sprocket-wheel, half-clutch, and sleeve.

Referring by letter to the accompanying drawings, A indicates a board or frame of any suitable dimensions, but preferably made to supply the place of the ordinary end-gate of a wagon or cart in which the seed or fertil-

izer to be distributed is carried. It is provided with the brackets *a a*, which form bearings or supports for the horizontal shaft B. Toward the outer end of this shaft is loosely secured a sprocket-wheel, C, which is operated by a sprocket-chain driven by the master-sprocket D, secured to one of the hind wheels of the wagon. This sprocket C has upon one face one half of a clutch, the other half of which, E, is loosely secured between a flanged sleeve, F, and a recessed cap or collar, G, and rotates loosely upon the said flanged sleeve F. (See Fig. 4.) The flanged sleeve F and the recessed collar G are rigidly secured to the shaft B by means of the set-screw H, and rotates with the said shaft. In the recess of the cap, and coiled around the sleeve F, is a spiral spring, I, one end of which is secured to the half-clutch E, and the other end to the cap G. By this arrangement when the clutch is thrown into gear the initial rotation of the sprocket and clutch causes the spring to first wind, and the increased tension of the spring produces a gradual strain upon the gearing, thereby imparting a very gradual momentum to the aforesaid gearing.

The winding of the spring may be limited by its tightening upon the shaft; but in practice I prefer to employ lug F′ on the sleeve, which is engaged by one of the lugs on the sprocket-wheel, which lug is longer than the other for that purpose. The relative arrangement of the lug F′ and the long lug on the sprocket-wheel is such that after the spring has exerted its force the engagement of these lugs will transmit the power directly to the shaft and set it in motion. When the clutch is thrown out of gear, the tension of the spring is sufficient to cause the half-clutch E to make a partial backward revolution, and permit the spring to resume its normal position.

I do not limit myself to the particular construction herein shown and described, as any device which would permit a lost motion between the driving and operating parts of my device would be within the spirit of my invention.

The opposite face of the sprocket C is provided with a flanged projection for the reception of a yoke, J, which, through the medium of the lever K and crank-arm L, enables the operator to throw the device in and out of gear, and hence stop the operation of the distributing device at will.

Rigidly secured to and near the inner end of the shaft B, and rotating therewith, is the beveled wheel M, which gears with the horizontal bevel-gear N, carried upon the lower end of a vertical shaft, O. The upper end of this shaft projects through into the hopper, and is provided with the usual stirring-pin, O′. Rigidly secured to the said shaft, just below the platform and rotating with the shaft, is a distributer or fan-wheel, $O^2$, for the purpose of sowing the grain or fertilizer broadcast. This fan is of the usual construction, and may have any number of arms; but I find it most desirable to limit the number to four.

For the purpose of stopping or permitting the flow of the seed or fertilizer, slides P P are provided beneath the hoppers P′, which are operated by hand, and are provided with semicircular slots Q, one-half in either slide, to permit the escape of the seed from the hopper to the fan. They are also provided with the elongated slot R, in order to permit their movement upon the vertical shaft O. These slides are countersunk in the platform, and are preferably made of thin pieces of metal with the outer ends turned, in order to form handles for the convenience of the operator. Located above the slides, and within the hopper, is a circular plate, S, turning loosely upon the upright shaft O, and provided with circular holes T T, through which the grain is dropped, and which said holes register with the semicircular slots in the aforesaid slides. Projecting outwardly and upwardly from one side of the plate S is a bent handle, T′, which projects through an elongated slot, *b*, in the covering-plate W, and enables the operator at will to turn the plate about the vertical shaft. The semicircular slot in the slides, in conjunction with the two openings in the plates S, enables the operator to drop the grain upon both sides of the fan simultaneously, or upon either side; but the essential object of this device is to enable the operator to adjust the point of delivery of the grain to the fan $O^2$, in order to regulate the cast for seed of different weights. It is obvious that the heavier the seed the quicker will be the cast or fall. Supposing, for instance, that the holes are set for the sowing of light seed and the cast is perfect on either side of the center, as shown in Fig. 12, now, if it is attempted to sow much heavier seed with the holes delivering the seed to the same point on the fan, the cast will be approximately the same as that shown in Fig. 13, which is to one side of the center, and sowing double in parts. By the use of my device the operator, who can readily observe the fault in the cast, can rotate the plate S about the shaft O, changing the positions of the delivery-openings to that shown by dotted lines, Fig. 13, until the cast is perfect and similar to that shown in Fig. 12. If one of the discharge-openings should be closed by a slide, the cast will be similar to that shown in Fig. 14; but if it is desired to sow directly to the rear and center instead of to one side, the operator can easily accomplish this by rotating the plate S and changing the discharge-opening approximately to the center, as illustrated in Fig. 15.

Pivotally secured to the plate S at *d*, between the said plate and slides, is a circular seed-plate, U, provided with a series of graduated holes registering with the openings in the plate S, for regulating the amount of seed to be dropped. For the purpose of permitting the rotation of this seed-plate upon its

pivot, a slot, *e*, is formed, through which the upright shaft O passes. Part of this seed-plate projects outside the hopper, and may be rotated by hand through an opening in the covering plate, in order that any set of openings may be made to register with the holes T in the seed-plate S, and hence regulate the flow of the seed, the hole in the seed-plate in register with the holes T being indicated by a number visible through an opening in the handle of the plate S, as shown in Fig. 10.

For the purpose of securing this circular seed-plate at any desired point and rigid with the plate S, a projecting arm or lug, *f*, on one side of the handle of the plate S has passing through it a spring-pin, *f'*, which sets in a corresponding series of holes provided in the seed-plate. When a pair of holes in the two plates are in register with each other, and the two plates are locked together, as above described, a sufficient force applied to either of the plates will swing both plates upon the axis of the plate S without rotating either of them independently of the other, and by this means the registering escape-orifices of both plates may be simultaneously adjusted with reference to the slot in the slides for the purpose of shifting the cast to conform to the differing gravities of the seed, as before described.

In order to protect the seed-plate and other devices from dust and other foreign substances, a covering-plate, W, is provided, having a circular opening, *g*, corresponding in size to the plate S, and a slot, *b*, through which the handle T' of the plate S projects.

For the purpose of securing the hopper to the platform, a circular ring, V, is provided and rigidly secured to the covering-plate W by bolts *h*, passing through the holes *h'*.

The operation is as follows: As the machine moves forward, the operator throws the clutch into gear, which first takes up the slack in the spiral spring I, secured within the cap G, until the tension of the spring is sufficient to overcome the resistance of the gearing when the said gearing begins gradually to revolve, imparting in turn a rotary movement to the fan or distributer. The slides are then adjusted, and the semicircular slot made to register with the openings in the seed and dropping plates when the sowing operation begins. Should the operator desire to sow broadcast or on both sides, the two holes in the plate S will be made to register with the slot in the slides; but should he desire to sow on one side only he has simply to push in one of the slides, so as to close the opening on that side of the dropping-plate. If he desires to sow in the center and from one opening only, he will give the plates S a partial rotation by means of the handle projecting through the covering-plate, and the hole will register substantially with the center of the semicircular slot or opening in the slides. Should the operator discover when both discharge-openings are in use that the cast is to either side or off the center, by manipulating the handle of the plate S he can readily adjust the cast for whatever substance he may be sowing, so that the cast will always fall evenly and in the center.

It may here be stated that the flow of seed from the hopper and the direction of cast of the seed may be effected by the perforated plate S, whether movable upon the pivot or otherwise, providing said plate is used in connection with slides or some other means for closing, or partially, one or more of its perforations, and I therefore to these ends may omit the seed-plate without an essential departure from this part of my invention.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a seeding-machine, one or more slides, each provided with an aperture or slot, in combination with plates movable one upon the other, and provided with apertures for varying the outlet for the escape of seed from the hopper through said slide or slides, substantially as described.

2. The slides, in combination with two movable and perforated plates between the slides and hopper, one of which plates has a series of perforations of varying diameter, any of which may be registered with the openings in the other plate, substantially as described.

3. In a seeding-machine, the combination of two pivoted and perforated plates, the axis of rotation of each of which is eccentric to the axis of the other plate, substantially as described.

4. In a seeding-machine, two perforated plates pivoted on axes eccentric to each other, and pivotally connected together, substantially as described.

5. In a seeding-machine, two pivoted and perforated plates, the axis of rotation of each of which is eccentric to the axis of the other plate, in combination with the slotted slides, substantially as described.

6. In a seeding-machine, one or more slotted slides, and two plates movable upon each other, and provided with apertures for varying the outlet for seed from the hopper, in combination with a fan or distributer arranged below the slides, substantially as described.

7. In a seeding-machine, one or more slides, each provided with an aperture or slot, in combination with two plates movable upon each other, and provided with apertures for varying the outlet for escape of seed from the hopper, one of said plates having a fixed pivot-bearing and means for locking said plates, whereby both may be simultaneously moved upon the said fixed axis to shift the cast of the seed, substantially as described.

8. In a seeding-machine, the drive-shaft and a sprocket thereon, in combination with a yielding and detachable connection between said shaft and sprocket, substantially as described.

9. In a seeding-machine, the drive-shaft, the sprocket sleeved thereon, and a half-clutch sleeved on said shaft, in combination with a spring coiled about the shaft and having one end secured to said half-clutch and its other end rigidly connected with the shaft, whereby said clutch and sprocket may partially rotate independently of the shaft, substantially as described.

10. The shaft, the sprocket sleeved on said shaft, the half-clutch on said sprocket, and means for reciprocating the same on the shaft, in combination with the sleeve and the cap rigidly secured together and to the shaft, the half clutch loose upon the sleeve, and the spring coiled about the sleeve and rigidly secured at its extremities to the half-clutch and cap, substantially as described.

11. In a seeding-machine, the drive-shaft, a sprocket thereon, a yielding and detachable connection between said shaft and sprocket, in combination with a distributer or fan located below the hopper and actuated by said shaft, substantially as and for the purpose described.

12. In a seeding-machine, the movable plate S, provided with distinct escape-apertures normally open, in combination with means for closing one of said apertures independently of the other.

LLOYD EBERHART.

Witnesses:
W. W. ELLIOTT,
WILL R. OMOHUNDRO.