No. 755,595. PATENTED MAR. 22, 1904.

W. S. GRAHAM.

DRIVE GEAR FOR CORN PLANTERS.

APPLICATION FILED JUNE 5, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

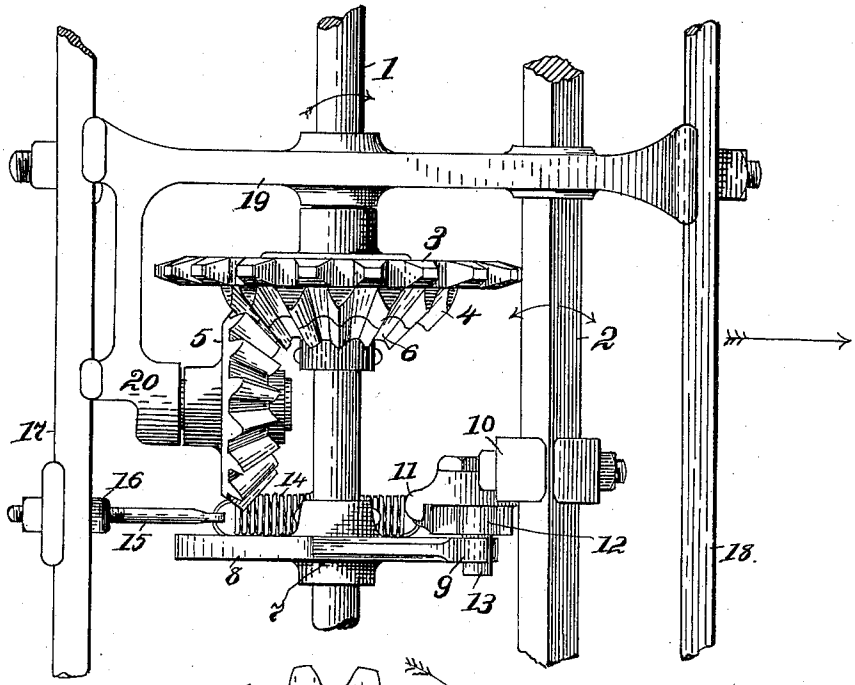
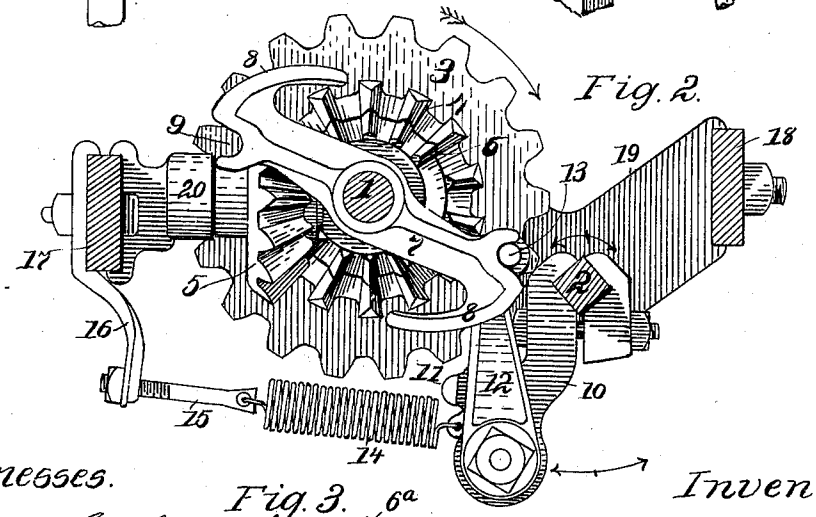


Fig. 2.

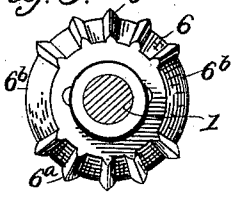


Witnesses.

Nora Graham.

Fay Graham

Fig. 3.



Inventor.

William S. Graham.

by L. P. Graham

his attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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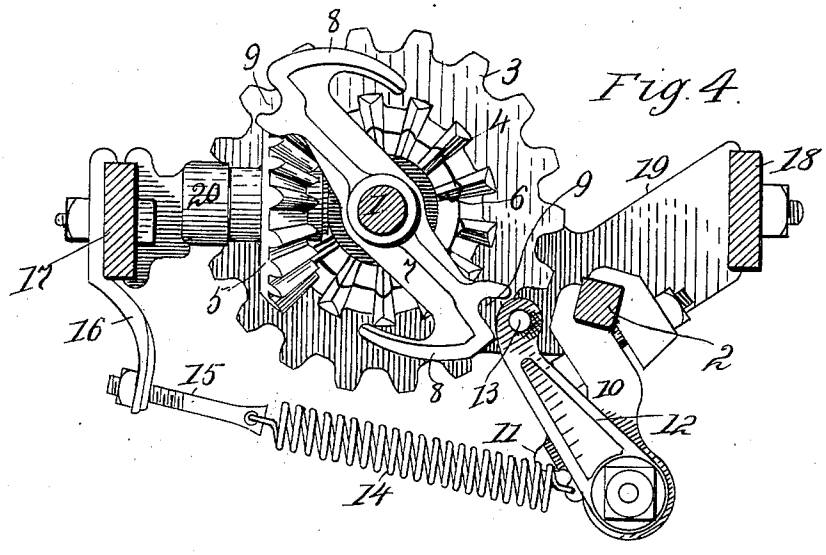
W. S. GRAHAM.

DRIVE GEAR FOR CORN PLANTERS.

APPLICATION FILED JUNE 5, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.



Witnesses
Ina Graham.
Ina C. Graham.

Inventor.
William S. Graham
by L. P. Graham
his attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 755,595. Patented March 22, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM S. GRAHAM, OF CANTON, ILLINOIS, ASSIGNOR TO PARLIN & ORENDORFF COMPANY, OF CANTON, ILLINOIS, A CORPORATION OF ILLINOIS.

DRIVE-GEAR FOR CORN-PLANTERS.

SPECIFICATION forming part of Letters Patent No. 755,595, dated March 22, 1904.

Application filed June 5, 1903. Serial No. 160,256. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. GRAHAM, of the city of Canton, county of Fulton, and State of Illinois, have invented certain new and useful Improvements in Drive-Gear for Corn-Planters, of which the following is a specification.

This invention relates to that class of check-row planters in which the seed-plates are started at a cross-row, are moved a certain distance while traveling between cross-rows, and are stopped before the next cross-row is reached.

The object of the invention is to provide means for driving the seed-plates intermittently.

The gear movement is of the mutilated-gear type as distinguished from the clutch type. It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a plan of my improved drive-gear. Fig. 2 is a side elevation of the gear, and Fig. 3 is a detail of the mutilated pinion used to develop intermittent motion in the seed-plates. Fig. 4 is a side elevation of the gear, showing how the mutilated pinion is thrown into mesh with the drive-wheel of the gear by the rock of the check-row shaft.

The shaft used to drive the seed-plates, commonly called the "drill-shaft," is shown at 1. The check-row shaft, which is rocked backward at cross-rows by knots on a check-row wire or other outside influence, is shown at 2. The drill-shaft is rotated intermittently in the direction indicated by the arrow in Fig. 1, while the check-row shaft is given a rocking motion. The functions and modes of operation of the drill-shaft and the check-row shaft of a planter are too well known to require special description.

A sprocket-wheel 3 is journaled loosely on the drill-shaft, and it has a bevel gear-wheel 4 formed on or secured to one of its faces. A mutilated bevel gear-wheel 6 is fastened onto the drill-shaft. It is nested in the face of wheel 4, its teeth correspond with the teeth of the wheel except for the mutilation, and when the mutilated wheel is in operation the two wheels rotate as one. In Fig. 3 the teeth of the mutilated wheel are shown at 6^a and the mutilated spaces are shown at 6^b.

A bevel gear-pinion 5 is journaled at right angles. The teeth of the pinion are as long as the combined lengths of the teeth of wheels 4 and 6, and it meshes with both wheels while the mutilated wheel is in action.

The mutilation of wheel 6 is sufficient to relieve the wheel from the action of the pinion, and when the mutilated spaces are reached in the travel of the wheel the drill-shaft will lose its driving force.

As a matter of preference the wheel 6 has two mutilated spaces, one opposite the other; but, as will hereinafter appear, provision may be made for controlling the drill-shaft with a wheel having but one mutilation.

When the drill-shaft is at rest with a mutilated space of wheel 6 presented to pinion 5, the sprocket-wheel 3, the gear-wheel 4, and the pinion may rotate indefinitely without affecting the drill-shaft and the seed-plates driven thereby; but if the drill-shaft is given a slight rotary motion sufficient to bring a tooth of the mutilated wheel into mesh with the pinion the drill-shaft will be rotated by the pinion until the other mutilated space is reached.

Various mechanical expedients may be employed to give the drill-shaft its initial motion and to stop it after it has completed an operative advance of the seed-plate; but I prefer to use the mechanism shown in the accompanying drawings, the characteristics of which are as follows: A bracket 10 is rigidly connected with the check-row shaft and is provided with a stop extension 11 on the rear edge of its swinging end. A stop-arm 12 is pivotally connected with the swinging end of the bracket 10, and it has a laterally-projecting pin 13, the function of which is to start and stop the drill-shaft. A spring 14 pulls rearward on arm 12 and tends to hold it in contact with

the stop extension 11. The spring also tends to hold the check-row shaft in its normal or prepared position, as shown in Fig. 2. An arm 7 is fastened onto the drill-shaft, and it extends in opposite directions therefrom. On each end of arm 7 is formed an inclined bearing-surface 8, and back of each incline is a notch or depression 9, adapted to receive pin 13 of stop-arm 12.

As shown in the drawings, the check-row shaft is in its forward position, the mutilated wheel is out of mesh with the pinion, and the drill-shaft is held against rotation by the pin 13 engaging a notch 9 of arm 7. Under these conditions the planter may travel forward with sprocket-wheel 3 receiving motion from a carrying-wheel, and the seed-plates will remain stationary so far as operative rotation is concerned until the check-row shaft is rocked backward by a check-row knot or some other influence outside the planter. Backward rock of the check-row shaft is imparted to the drill-shaft in a reverse direction by pin 13 acting on arm 7, and as soon as the drill-shaft is rocked forward far enough to bring a tooth of the mutilated wheel into mesh with the pinion force will be imparted to the drill-shaft through the pinion to complete an operative movement of the seed-plates. The rule of action of the specific mechanism herein described demands that the seed-plates shall receive an operative motion while the drill-shaft is making a one-half rotation. The spring 14 returns the check-row shaft to its shown position as soon as the check-row knot is passed, and when the incline on the opposite end of arm 7 approaches pin 13 it finds lever 12 held by the spring against stop 11 with pin 13 extended across the path of the incline. The incline forces the pin away from the drill-shaft against the tension of the spring, and as soon as the incline passes the pin, which is just as the mutilated gear-wheel is moving out of mesh with the pinion, the pin is snapped into notch 9 and the drill-shaft is locked.

By gearing the seed-plates with the drill-shaft, so that a complete rotation of the shaft will give an operative advance to the seed-plates, one of the ends of arm 7 may be omitted and the gear-wheel 6 may be mutilated on one side only; but it is preferable to give an advance to the seed-plates by a one-half rotation of the drill-shaft, for the reason that there is less motion, less wear, and less jar under the last-named arrangement and for the further reason that a larger sprocket-wheel may be used and the drive-chain may run around the rear bar 17 of the front frame instead of entirely above it.

The front cross-bar of the front frame of a planter is shown at 18 and the rear cross-bar at 17. A bridge-bracket 19 connects the cross-bars and provides bearings for the shafts, and a lateral extension of the bracket provides a support 20 for the bearing of pinion 5. An arm 16 on cross-bar 17 provides a point of connection for the link-bolt 15 of spring 14.

I claim—

1. Drive-gearing for seed-plates of planters, comprising a drive-shaft for the seed-plates, a gear-wheel journaled loosely on the drive-shaft, a mutilated gear-wheel fastened onto the shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, and means for moving the shaft to carry the multilated wheel into mesh with the pinion.

2. Drive-gearing for seed-plates of planters, comprising a drive-shaft for the seed-plates, a gear-wheel journaled loosely on the drive-shaft, a gear-wheel mutilated on opposite sides and fastened onto the shaft with its teeth normally in line with the teeth of the loose wheel, a pinion in mesh with the loose wheel and adapted to mesh with the mutilated wheel, and means for moving the shaft to carry the mutilated wheel into mesh with the pinion.

3. Drive-gearing for seed-plates of planters, comprising a drive-shaft for the seed-plates, a bevel-gear drive-wheel journaled loosely on the shaft, a bevel-gear mutilated wheel fastened onto the shaft and nesting with the loose wheel with its teeth normally in line with the teeth of the loose wheel, a bevel gear-pinion having teeth long enough to engage the teeth of the loose wheel and the teeth of the mutilated wheel, said pinion being in mesh with the loose wheel, and means for moving the drive-shaft to carry the mutilated wheel in mesh with the pinion.

4. Drive-gearing for seed-plates of planters, comprising a drive-shaft for the seed-plates, a sprocket-wheel journaled loosely on the shaft, a gear-wheel attached to the sprocket-wheel, a mutilated gear-wheel fastened onto the shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, and means for moving the shaft to carry the mutilated wheel into mesh with the pinion.

5. In driving-gear for the seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a mutilated gear-wheel fastened onto the drill-shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, and an arm on the check-row shaft adapted to engage the drill-shaft and move the mutilated wheel into mesh with the pinion.

6. In driving-gear for the seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a mutilated gear-wheel fastened onto the drill-shaft with its teeth normally in line with the teeth of the

loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, an extension on the drill-shaft and a yielding arm on the check-row shaft adapted to engage the extension on the drill-shaft.

7. In driving-gear for the seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a mutilated gear-wheel fastened onto the drill-shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, an extension on the drill-shaft having on its end an incline which terminates in a notch, a yielding arm on the check-row shaft and a pin on the end of the arm adapted to ride up the incline of the extension and engage the notch thereof.

8. In drive-gearing for seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a gear-wheel mutilated on opposite sides and fastened onto the drill-shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, arms on the drill-shaft extending in opposite directions and having each an inclined outer surface terminating in a notch, a yielding arm on the check-row shaft, and a pin on the arm adapted to engage the notches.

9. In drive-gearing for the seed-plates of planters, the combination of a drill-shaft, a check-row shaft, a gear-wheel journaled loosely on the drill-shaft, a mutilated gear-wheel fastened onto the drill-shaft with its teeth normally in line with the teeth of the loose wheel, a pinion meshing with the loose wheel and adapted to mesh with the mutilated wheel, a bracket attached to the check-row shaft, an arm hinged on the extended end of the bracket, a stop on the bracket limiting the swing of the arm away from the check-row shaft, a spring drawing the arm toward the stop, and a pin on the swinging end of the arm adapted to engage an extension on the drill-shaft.

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

WM. S. GRAHAM.

Witnesses:
W. F. MOORE,
K. D. VITTUM.