No. 813,734. PATENTED FEB. 27, 1906.

F. R. PACKHAM & G. P. OATES.

SPEED DEVICE FOR SEEDING MACHINES.

APPLICATION FILED OCT. 23, 1905.

Fig. 1.

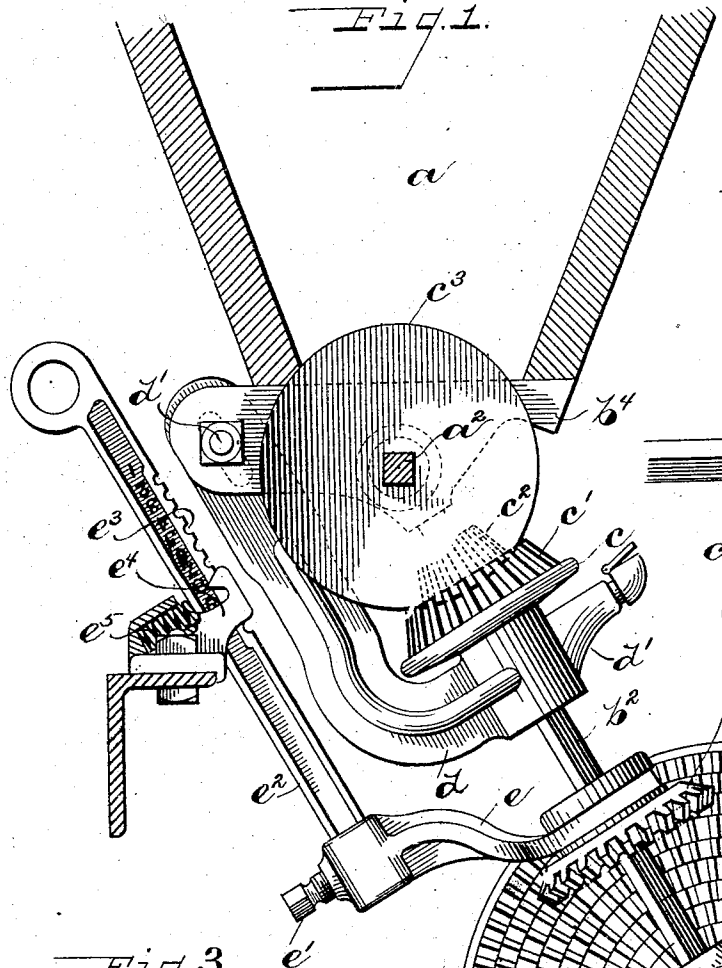



Fig. 2.

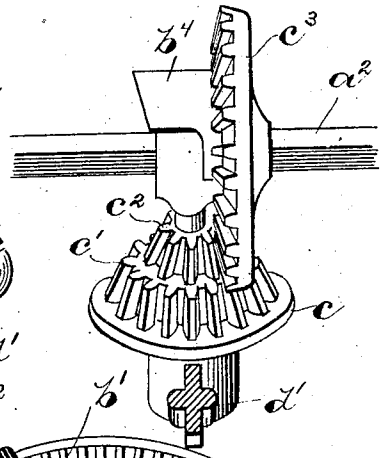
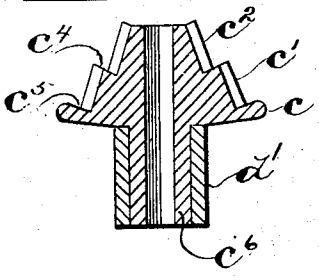



Fig. 3.




Witnesses

J. Llewellyn Walker

Chas. G. Milah

Inventors

Frank R. Packham

and George P. Oates

By Staley & Bowman

Attorneys

# UNITED STATES PATENT OFFICE.

FRANK R. PACKHAM AND GEORGE P. OATES, OF SPRINGFIELD, OHIO, ASSIGNORS TO AMERICAN SEEDING MACHINE COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

## SPEED DEVICE FOR SEEDING-MACHINES.

No. 813,734. Specification of Letters Patent. Patented Feb. 27, 1906.

Application filed October 23, 1905. Serial No. 283,917.

*To all whom it may concern:*

Be it known that we, FRANK R. PACKHAM and GEORGE P. OATES, citizens of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Speed Devices for Seeding-Machines, of which the following is a specification.

Our invention relates to grain-drills, and particularly to variable-speed device for the seed-feeding mechanism.

The object of the invention is to provide a device which will be simple, cheap, and efficient and which will give to the seed-feeding devices a greater range of speeds than the devices in common use, thus increasing the scope of the work to which these devices may be applied.

With the above primary and other incidental objects in view the invention consists of the structure, the parts and combination thereof, or their equivalents, hereinafter described, and set forth in the claims.

Referring to the drawings, Figure 1 is an elevation showing the variable-speed devices constituting the driving connection between the main drive-shaft of a seeding-machine and the drive-shaft common to the feed devices. Figs. 2 and 3 are details of the stepped gear hereinafter described.

In the drawings, $a$ is the hopper of the seeding-machine, of which $a'$ is the main drive-shaft, which in the usual construction is the axle of the carrying-wheels. Above this shaft and adjacent to the bottom of the hopper $a$ is a second shaft $a^2$, which constitutes the actuating mechanism for the various seed-feeding devices. On the main drive-shaft $a'$ is mounted a gear-disk $b$, having multiple concentric sets of teeth adapted to engage a pinion $b'$, slidingly mounted on a counter-shaft $b^2$, preferably formed square, which shaft is supported in suitable bearings in casting $b^3$ $b^4$, located upon the main drive-shaft and the hopper, respectively, said construction being in common use. Slidingly mounted near the upper end of the counter-shaft $b^2$ is a stepped pinion $c$, having two sets of teeth $c'$ $c^2$, the set $c'$ being preferably twice the number of the set $c^2$. Upon the shaft $a^2$ is a movable gear $c^3$, with which the respective sets of gear-teeth of the pinion $c$ are adapted to engage. To maintain this gear $c^3$ in engagement with the pinion $c$, we form the upper ends of the teeth $c'$ at an angle, as shown at $c^4$ in Fig. 3, and also provide a projecting rim, likewise beveled or angled, as shown at $c^5$ in Fig. 3. The rim of the gear $c^3$ is beveled to correspond, so that when the pinion is thrown into engagement with said gear the gear will be locked against longitudinal movement on its shaft.

In Fig. 2 the gear $c^3$ is shown in mesh with the smaller set $c^2$ of gear-teeth, which may be assumed to be the normal condition, or adapted to drive the feed devices through the normal range of speeds as determined by the adjustment of the pinion $b'$ with the gear-disk $b$.

In the drawings the gear-disk $b$ is shown to have ten sets of teeth. Thus by shifting the pinion $b'$, as hereinafter described, ten different speeds may be given to the speed devices. However, under certain conditions it is desirable to give to the seed-feeding devices an extraordinary speed which will increase the quantity of grain sown. This may be accomplished by withdrawing the pinion $c$ slightly and shifting the gear $c^3$ laterally on the shaft $a^2$, which will permit the pinion $c$ to be moved upward until the set of gear-teeth $c'$ is in mesh with the gear $c^3$, which will result in giving to the feed devices additional speeds which were not possible through the combination of the smaller step of the gear $c$ and the gear-disk $b$, as before described. The meshing of the respective steps of the pinion $c$ and the gear $c^3$ will not be theoretically correct; but it has been demonstrated by experiments that the construction is practical for the work to be performed.

In addition to being mounted on the shaft $b^2$ the pinion $c$ has, through the mechanism of an extended hub $c^6$ thereon, a bearing in a bracket $d$, secured by a bolt $d'$, and a slotted connection with the casting $b^4$ on the hopper $a$, the said hub being of the same length as the bearing $d'$ of said bracket. By this means the pinion $c$ is shifted on the counter-shaft $b^2$ and held in its adjusted position with either one of its stepped working surfaces in mesh with the gear $c^3$, and the bracket $d$ also forms, in effect, an adjustable and self-alining support or bearing for the shaft $b^2$.

The pinion $b'$ is shifted upon the shaft $b^2$ to bring it into engagement with the various

concentric sets of teeth by a yoke $e$, adjustably secured by a set-screw $e'$ to an indicator-stem $e^2$. The stem $e^2$ is provided with a series of notches $e^3$, adapted to be engaged by an edge or rib on a keeper $e^4$, through which said stem may be moved. A spring $e^5$ holds said stem in engagement with the edge of the keeper. The stem $e^2$ is provided with a series of characters corresponding to the notches $e^3$ and indicating by their relation with the keeper $e^4$ the particular set of concentric teeth of the gear-disk $b$ which is in engagement with the pinion $b'$. In assembling the machine the yoke $e$ is adjusted on the stem $e^2$ by means of the set-screw $e'$ to bring the pinion $b'$ into engagement with the set of concentric teeth indicated by the characters of the stem $e^2$.

It will be seen that by the construction described a greater range is given to the quantity of seed which may be sown, that additional or more adequate bearing and support is provided for the upright or sliding pinion-shaft, and, further, improved means for indicating the various adjustments of the speed device.

Having thus described our invention, we claim—

1. In a device as described, a main shaft, a gear-disk thereon having a series of concentric sets of gear-teeth, a counter-shaft, a sliding pinion on said shaft adapted to be moved into engagement with each of the various sets of teeth on said disk, a driven shaft, a gear laterally movable on said shaft, and a stepped pinion on said counter-shaft, the respective steps of which are adapted to be engaged by said laterally-movable gear, substantially as specified.

2. In a device as described, a main shaft, a gear-disk thereon having a series of concentric teeth, a counter-shaft, a sliding pinion thereon and adapted to engage each of said sets of concentric teeth, a yoke engaging said pinion, a stem adjustably attached to said yoke having indicating characters thereon and notches in the edge thereof adapted to be engaged by a stationary projection, and a spring to hold said stem in its adjusted position, substantially as specified.

3. In a device as described, a main driving-shaft, a counter-shaft adapted to be driven at different rates of speed thereby, a stepped pinion driven by said counter-shaft to transmit the movement thereof, and a shifting bracket adapted to support said stepped pinion in different positions on said counter-shaft, said bracket being further adapted to form an adjustable and self-alining supporting-bearing for said counter-shaft substantially as specified.

4. In a device as described, a main driving-shaft, a counter-shaft driven at different rates of speed thereby, a shiftable stepped pinion mounted on and driven by said counter-shaft to transmit the movement thereof, said pinion having an extended hub about said shaft, and a shifting bracket having a bearing for said hub, adapted to shift said pinion and form an adjustable and self-alining supporting-bearing for said counter-shaft substantially as specified.

5. In a change-of-speed device, a driven shiftable stepped pinion, a shiftable gear driven by said pinion, and having a beveled face on the rim thereof adapted to alternately engage similarly-beveled faces on said pinion to lock said gear in meshing position, substantially as and for the purpose specified.

In testimony whereof we have hereunto set our hands this 20th day of October, A. D. 1905.

FRANK R. PACKHAM.
GEORGE P. OATES.

Witnesses:
THAYER K. MORROW,
CHAS. I. WELCH.