(No Model.)

L. HEATH.

CHANGEABLE SPEED GEARING.

No. 458,830. Patented Sept. 1, 1891.

Fig. 1.

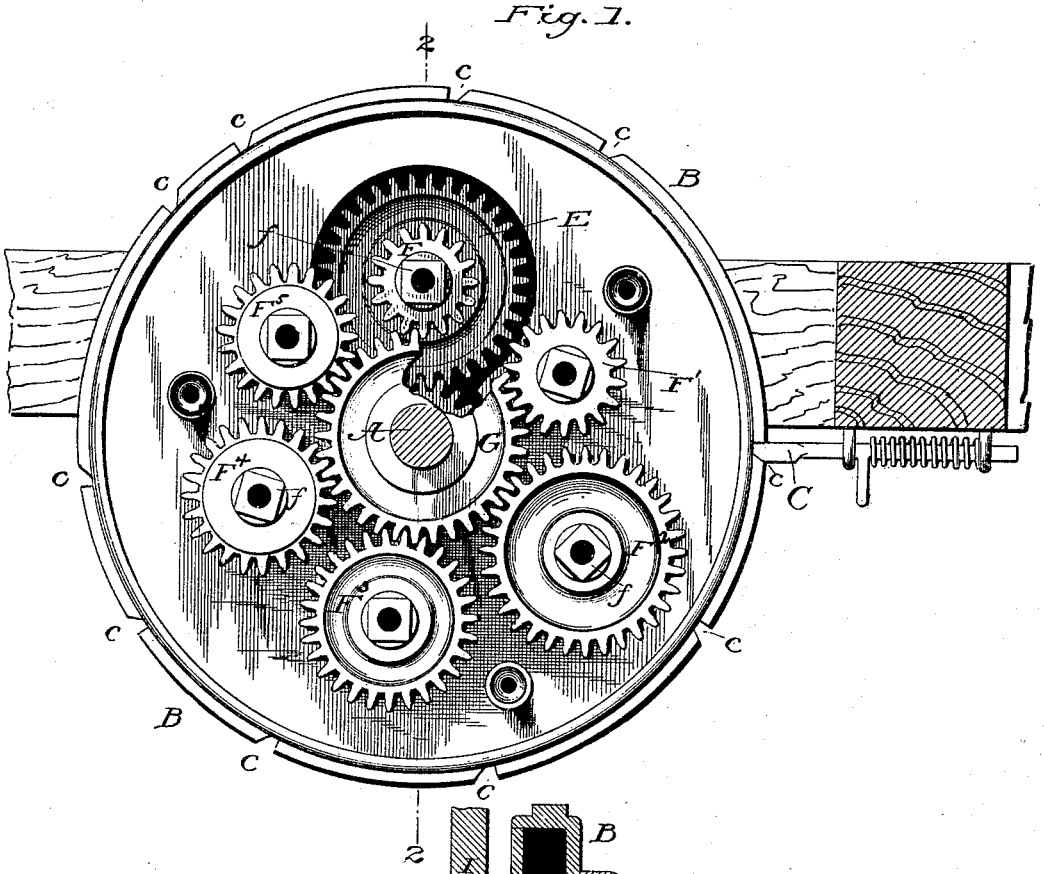
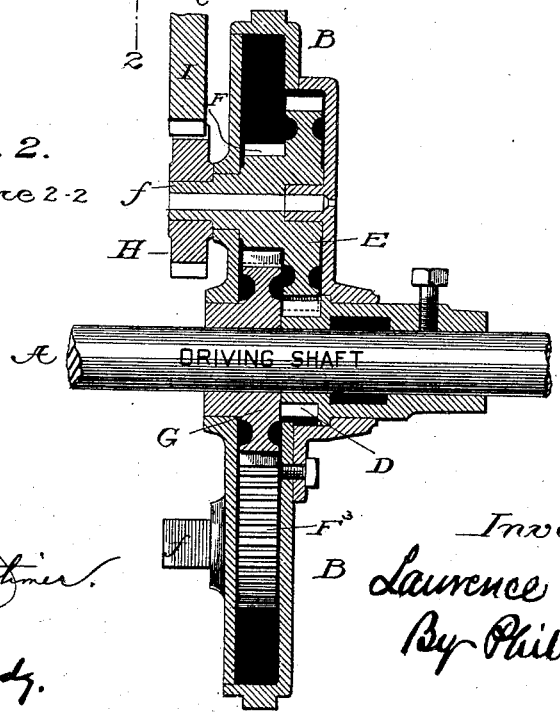


Fig. 2.
on line 2-2



Witnesses:
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UNITED STATES PATENT OFFICE.

LAWRENCE HEATH, OF MACEDON, NEW YORK, ASSIGNOR TO GEORGE W. KIRKPATRICK, OF SAME PLACE.

CHANGEABLE-SPEED GEARING.

SPECIFICATION forming part of Letters Patent No. 458,830, dated September 1, 1891.

Application filed April 22, 1891. Serial No. 389,909. (No model.)

To all whom it may concern:

Be it known that I, LAWRENCE HEATH, of Macedon, in the county of Wayne and State of New York, have invented certain Improvements in Changeable-Speed Gearing, of which the following is a specification.

My invention relates to that class of changeable-speed gearing generically represented in Letters Patent No. 345,018, to Albert Armitage, dated July 6, 1886, in which a center pinion driven at a constant rate of speed drives directly and at different rates of speed a series of pinions mounted in a surrounding revoluble case or shell, so that by turning the shell one or another of the secondary pinions may be brought into operative relation to the parts to be driven therefrom.

The aim of my invention is to so modify this system of gearing that the secondary pinions may receive a very slow motion in relation to that of the primary driving-shaft, whereby the gearing is the better adapted for the driving of the fertilizer-distributers of grain-drills from the main axle, and for other special uses.

In the accompanying drawings, Figure 1 is a side elevation of my improved gearing with the side of the shell or case removed to expose the internal parts to view. Fig. 2 is a vertical cross-section on the line 2 2 of Fig. 1.

Referring to the drawings, A represents the main driving shaft or axle, driven constantly and at a uniform speed, and B is the pinion-supporting case or shell, mounted loosely on and revoluble around the axle, but held normally at rest by means of a locking-bolt C or other suitable locking device adapted to enter notches *c* in the shell.

D is the primary driving-pinion, fixed firmly to the axle and constantly engaging the pinion E, mounted on a stud in the shell. The pinion E is formed integral with or firmly secured to the smaller secondary pinion F, which in turn constantly engages and drives the center pinion G, mounted to turn loosely on the axle within the shell, so that it is turned in the same direction as the axle, but at a slower speed.

F′ F^2 F^3 F^4, &c., represent additional secondary pinions grouped around the center pinion, mounted on studs in the shell, and made of different diameters, so that they are driven by the center pinion at different speeds. Each of the secondary pinions is formed with a neck or journal *f*, projected out through the side of the shell, so that the external pinion H may be applied to any one of the necks at will in order to communicate motion thence to the gear I, which occupies a fixed position, and from which the fertilizer or other mechanism is driven.

In order to drive the gear I at one speed or another, as may be demanded, it is only necessary to apply the pinion H to the neck of that secondary pinion which is turning at the appropriate speed and then turn the shell bodily around the axle until the external pinion is carried into engagement with gear I, when the shell is again locked fast. The axle communicates motion through D, E, and F to the center pinion, which in turn drives all the secondary pinions except F. If the external pinion is applied to F, it will receive motion directly therefrom; but if applied to either of the secondary pinions it will receive motion through or by way of the center pinion. It will be seen that all the pinions are sustained and protected within the shell.

The essence of the present invention lies in the introduction of the pinions D and E between the axle and the series of secondary pinions to reduce the speed, and it will be understood by the skilled mechanic that the details may be varied at will provided this feature is retained.

Having thus described my invention, what I claim is—

1. The two concentric independently-revoluble pinions, in combination with the series of secondary pinions of different diameters engaging one of them, a pinion connecting one of the secondary pinions with the other of the first-named pinions, a revoluble shell or support wherein the secondary pinions are mounted, and means for locking said shell to prevent its rotation.

2. In combination with the revoluble shell and the series of secondary pinions of different diameters mounted therein, the center pinion engaging them, a driving-shaft, and intermediate spur-pinions through which said shaft turns the center pinion at a slower speed.

In testimony whereof I hereunto set my hand, this 5th day of March, 1891, in the presence of two attesting witnesses.

LAWRENCE HEATH.

Witnesses:
W. P. THISTLETHWAITE,
W. L. ACKER.