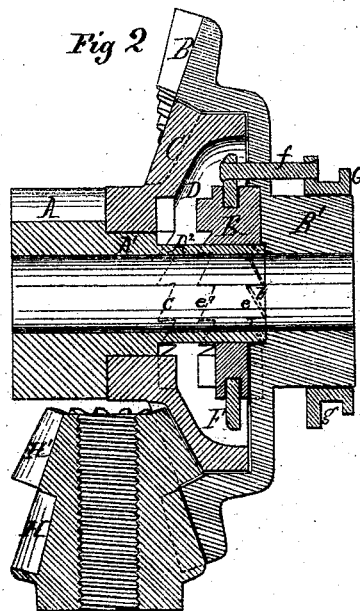
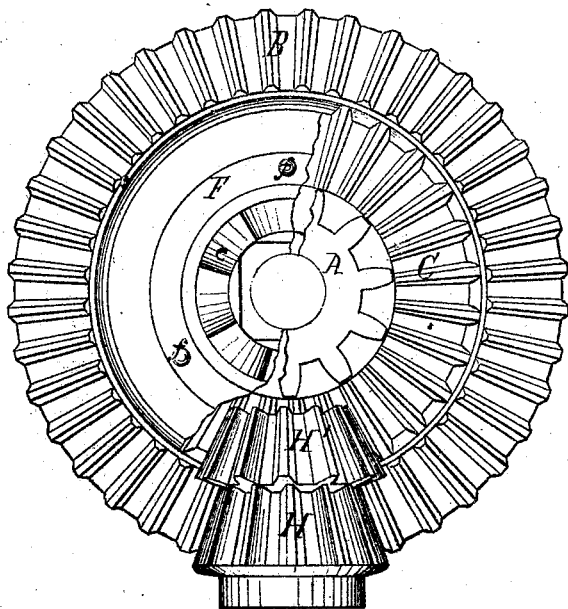
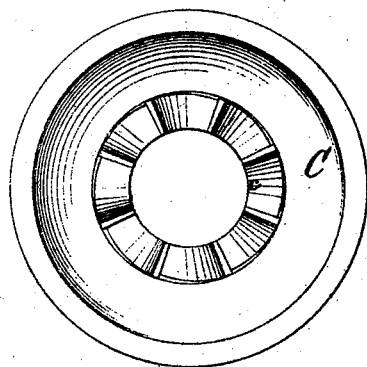


## Gearing for Harvesters.

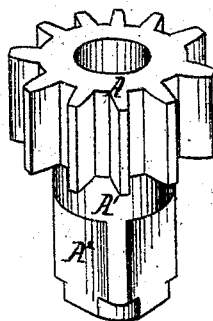
Patented June 20, 1871.



*Fig. 3.*



*Fig. 4.*



*Witnesses.*

Ship Mahon  
 H. H. Doubleday

*Inventor,*

Joel Harrington  
by his Attorney  
A. M. Smith

# UNITED STATES PATENT OFFICE.

JOEL FARRINGTON, OF CORRY, PENNSYLVANIA.

## IMPROVEMENT IN GEARING FOR HARVESTERS.

Specification forming part of Letters Patent No. 116,038, dated June 20, 1871.

*To all whom it may concern:*

Be it known that I, JOEL FARRINGTON, of Corry, Erie county, State of Pennsylvania, have invented certain new and useful Improvements in Gearing for Harvesting-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a face view of the bevel-wheel, with the pinion and inner bevel-wheel partly broken away to show the arrangement of parts; Fig. 2 is a transverse section of the same; Fig. 3 is an inner or rear view of the inner bevel-wheel, with its ratchet or clutch; and Fig. 4 is a perspective view of the pinion through which motion is communicated to the bevel-wheels.

Similar letters refer to corresponding parts in all the figures.

It has long been an object with the manufacturers of reaping and mowing-machines to effect as compact an arrangement of gearing as possible consistent with the work to be accomplished, with a view to the reduction of weight and economy of space in the construction of the machine.

Among the functions required of the machine of late years has been a change of speed of the cutters, to adapt it to the different crops and to different conditions of the same crop; the rapid vibration of the cutters, which is indispensable in some instances to the successful operation of the machine, having been found very objectionable in other instances or conditions of the crop, where a less rapid vibration of the cutters would be equally efficient, such rapid vibrations, where not required by the condition of the grain or grass operated upon, tending to jar and strain the machine, and to effect a loosening of the joints, which in a short time renders the machine comparatively worthless and inoperative.

My invention consists in a novel arrangement of two concentric bevel-wheels, with intermediate shifting-clutch, in combination with the driving-pinion and a double bevel-pinion, substantially as hereinafter described, whereby either of said bevel-wheels may be made to operate the bevel-pinion while the other bevel-wheel rotates loosely on its shaft, driven by the bevel-pinion.

To enable others to understand and practically apply the invention, I will describe the same with reference to the drawing, in which—

A represents the driving-pinion, mounted upon either the main axle or secondary shaft, as may be desired, and operated in any usual manner. This pinion A is provided with a shank or sleeve, A<sup>1</sup> A<sup>2</sup>, one portion of which, A<sup>1</sup>, is rounded, and the other, A<sup>2</sup>, squared, for purposes which will be presently explained. B is the larger bevel-wheel, which is mounted loosely on the same shaft with pinion A. Said bevel-wheel is dished on its toothed face, and receives within it the smaller bevel-wheel C in such relation that the teeth of the two wheels are in the same or nearly the same plane, as shown in Fig. 2. The inner wheel C is mounted on the rounded portion A<sup>1</sup> of the shank of pinion A, so as to turn loosely thereon, and is also dished, but on its reverse face, or the face adjacent to wheel B, in such manner as to leave an inclosed annular space, D, between the two wheels and surrounding the shank A<sup>2</sup> of pinion A. E is a sliding clutch mounted on and rotating with shank A<sup>2</sup> within the inclosed space D. Said clutch is provided on its opposite vertical sides with inclined teeth or clutch-faces *e e'*, and the adjacent faces of wheels B and C are also armed with corresponding teeth or clutch-faces *b c*, with either of which the clutch E may be made to engage, for imparting its own rotation, received from pinion A and shank A<sup>2</sup> thereto. The clutch-ring E is grooved on its periphery to receive a loose collar or ring, F, which surrounds the clutch-ring, and has connected with it a number (two, three, or more) of rods or bolts *f*, which pass through perforations in the shell of wheel B, and are connected with a sliding collar, G, mounted loosely on the hub B' of wheel B. The collar G may be grooved, as at *g*, to receive the forked or crescent-shaped end of a shifting-lever; or any suitable mode of connection between said collar and shifting-lever which will permit the unobstructed rotation of the collar may be used. The movement of collar G longitudinally on hub B' imparts a corresponding movement to the inclosed clutch E, which may be thus made to engage with either of the concentric bevel-wheels B C, as described. H H' represents a double bevel-pinion, either cast in one piece

or made separately, and keyed to one and the same shaft, as may be preferred, and so arranged as to be always in gear, the one, H, with the wheel B, and the other, H', with the wheel C, in position represented in the drawing.

The operation of the parts is as follows: The pinion A, when the machine is at work, is rotated by the spur-wheel with which it engages, and imparts a corresponding rotation to the clutch E mounted on its squared shank A<sup>2</sup>. When the clutch *e* is engaged with the corresponding face *b* of bevel-wheel B, motion is imparted to said wheel, and therefrom to bevel-pinion H, which, being rigidly connected with pinion H', drives said pinion, and therewith the bevel-wheel C, which, being disengaged from clutch E, simply runs loosely on its bearing or hub A<sup>1</sup> of the pinion A. When, on the other hand, the clutch is engaged with bevel-wheel C, said wheel is driven by pinion A and imparts the slower motion to pinion H, and its shaft, due to its diminished diameter, and the larger wheel B, in turn, rotates loosely on its shaft, driven by pinion H. With the clutch at a point intermediate between the clutch-faces *b* and *c*, and disengaged therefrom, the pinion A and clutch may rotate while both bevel-wheels are thrown out of action.

The above description has special reference

to the application of the double-speed gearing to the driving of the cutting apparatus, but the construction of the concentric gears B and C with the inclosed shifting-clutch is such as to adapt them equally well to the changing of the speed of the raking apparatus when desired.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, as an improvement in harvesting-machines, is—

1. The bevel-wheel B and smaller bevel-wheel C, arranged concentrically to each other, and having their cogged faces in about the same vertical plane, in combination with the inclosed intermediate shifting-clutch E, substantially as and for the purpose described.

2. The pinion A, provided with the hub or shank A<sup>1</sup> A<sup>2</sup>, in combination with the concentric bevel-wheels B and C, operating substantially as described.

3. The clutch E inclosed between the bevel-wheels, in combination with the loose collar F and rods *f*, for operating the same, as described.

4. The combination of pinion A, bevel-wheels B C, inclosed clutch E, and double pinion H H', arranged and operating substantially as described.

Witnesses: JOEL FARRINGTON.

W. J. FORD,  
J. N. BRIGHT.