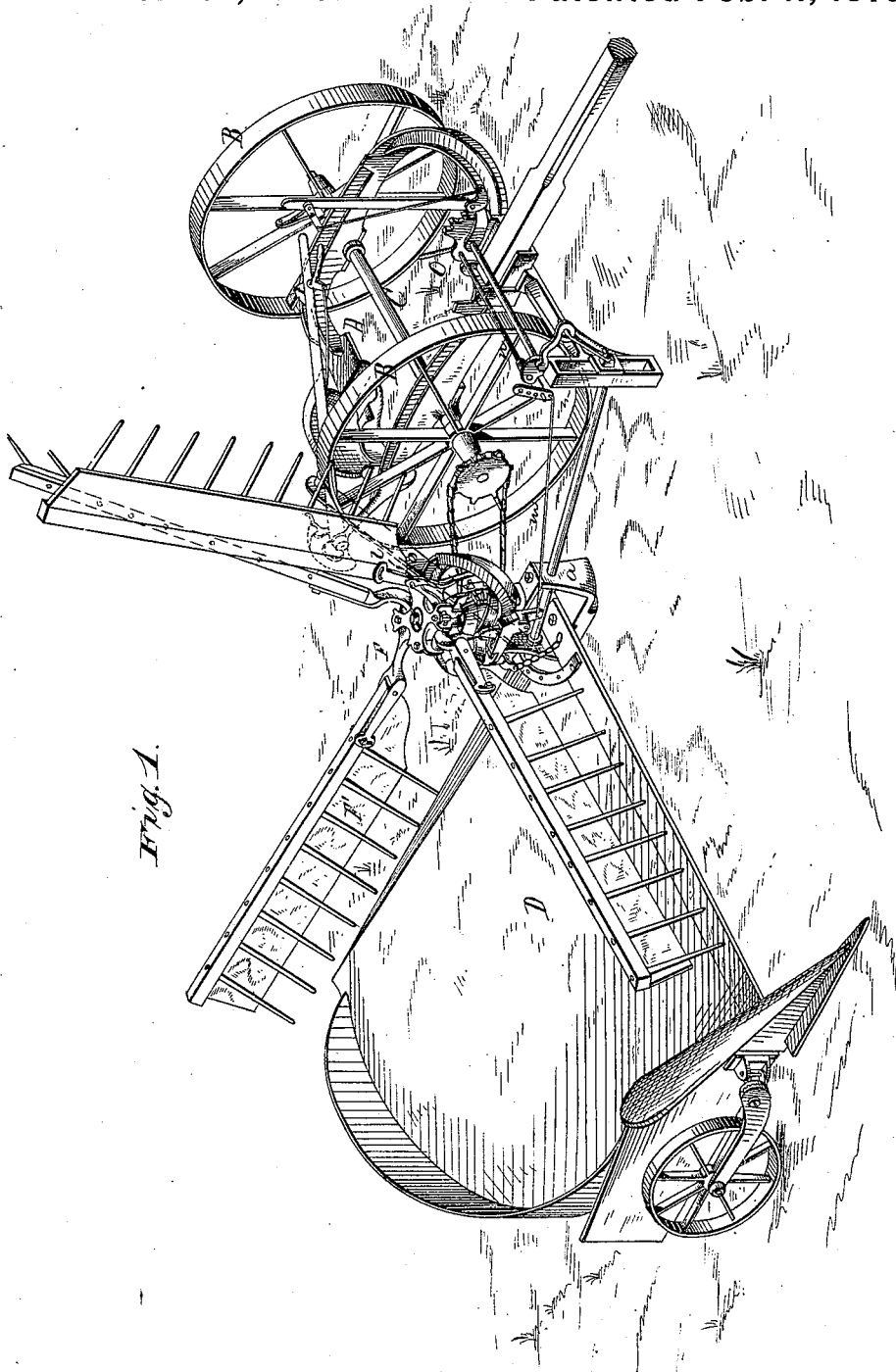


W. K. MILLER.  
Harvester-Rake.

No. 212,250.

Patented Feb. 11, 1879.



*Fig. 1.*

WITNESSES  
*Frank L. Owsand*  
*Alexander Malcom*

*By T. J. S. Attorney*

INVENTOR  
*Wm. K. Miller*  
*Chas. Smith*

W. K. MILLER.  
Harvester-Rake.

No. 212,250.

Patented Feb. 11, 1879.

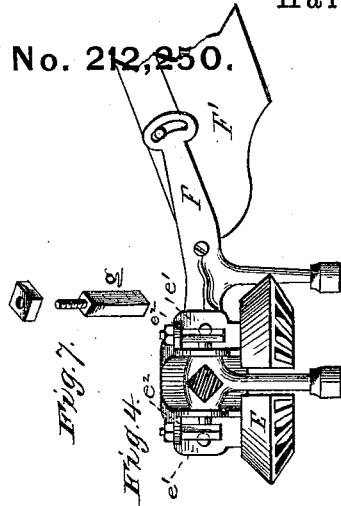


Fig. 1.

Fig. 4.

Fig. 5.

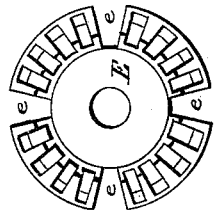


Fig. 6.

Fig. 3.

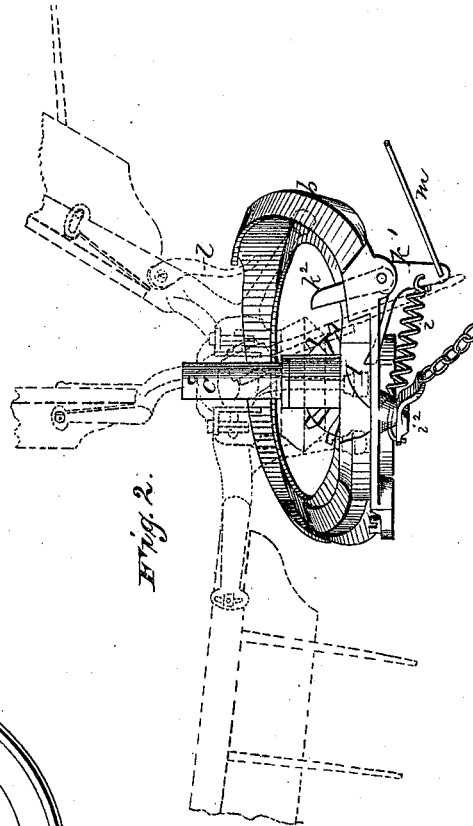
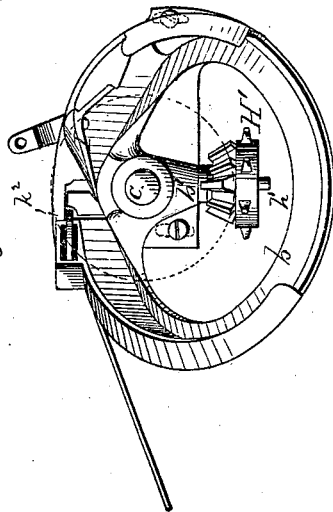


Fig. 2.

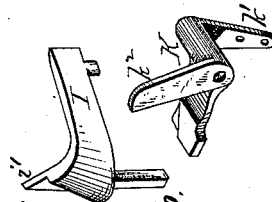


Fig. 8.

Fig. 9.

WITNESSES  
*Frauck L. Couraud.*  
*Alexander Mahon*

By *Tip's* Attorney

INVENTOR  
*Wm. K. Miller*  
*A. M. Smith*

# UNITED STATES PATENT OFFICE.

WILLIAM K. MILLER, OF CANTON, OHIO.

## IMPROVEMENT IN HARVESTER-RAKES.

Specification forming part of Letters Patent No. **212,250**, dated February 11, 1879; application filed October 14, 1878.

*To all whom it may concern:*

Be it known that I, WILLIAM K. MILLER, of Canton, county of Stark, State of Ohio, have invented certain new and useful Improvements in Harvester-Rakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a reaping-machine with my improvements applied. Fig. 2 is a side elevation of the rake-cam and attachments. Fig. 3 is a plan view of the same. Fig. 4 is a side elevation of the crown or rake driving-wheel and rake-head. Fig. 5 is a bottom view of the rake-wheel. Fig. 6 is a perspective view of the bevel-wheel for driving the rake-wheel, detached from its driving sprocket-wheel. Fig. 7 is a perspective view of the pin or bolt for holding the rake-pivot in place. Fig. 8 is a perspective view of the cam switch or gate, and Fig. 9 is a perspective view of the gate-latch and its actuating-arms.

Similar letters of reference denote corresponding parts wherever used.

My invention relates to a novel construction of the rotating rake-head and its driving-gears, whereby they are brought into more compact form than in the ordinary construction, thus adapting them to be better located relatively to the grain to be operated upon, to deliver the gavel in better form, and whereby also they are rendered less liable to become entangled with or obstructed by the falling grain.

The invention consists in the employment of a sectional or notched crown or bevel wheel, forming the rotary head to which the rake and reel arms are attached, whereby the heel ends of said arms are adapted to fall within the circle of said wheel, instead of projecting beyond it, as in the ordinary construction; second, in a novel construction of bevel-wheel for actuating said crown-wheel and rake-head, as hereinafter explained.

In the accompanying drawings, A represents the main frame; B B, the driving-wheels; C, the main driving-axle, and D the hinged platform, said parts being constructed in any usual or preferred manner. At the inner front corner of the platform are uprights *a a*, se-

cured either to the platform, finger-bar, or shoe; by preference to the latter, as permitting the location of one in advance and the other in rear of the finger-bar, to which uprights is secured the rake stand or cam *b*, (represented in Figs. 2 and 3,) surrounding a central stationary axle, *c*, upon which is mounted the rake-wheel E. This wheel is made in the usual form—that is to say, either a crown or bevel wheel; but instead of being made continuous is notched or divided in its periphery into sections, three, four, or more, according to the number of rake and reel arms to be employed—that is to say, portions of the periphery, with the bevel-teeth pertaining to such portions, are cut away from the wheel, forming radial notches *e* therein, said notches serving as sockets, into which the heel or roller ends of the rake-arms fall as the rakes drop into the grain and pass over the platform, and also for enlarged teeth on the driving bevel-wheel, hereinafter described, this construction giving a divided or sectional form to the cam or bevel wheel, as shown in Figs. 4 and 5. Upon the upper face of this wheel are formed or otherwise rigidly secured vertical lugs or ears *e'*, arranged in pairs on opposite side of the notches in the wheel, in which lugs the rake and reel arms F are pivoted in lines radial to the bevel-wheel.

The rake-arms outside of their pivotal points are curved downward and forward, and are then turned outward in an inclined position, in such manner as to bring the rake-heads F', attached thereto, into lines tangential, or nearly so, to the rake-wheel, thereby causing the rake-heads to assume a position parallel with the cutting apparatus, either prior to or simultaneously with their passage over the cutters, while at the same time causing the rake-teeth to assume a position inclining backward from their pivots, as shown in Fig. 1, for more effectually pressing the grain into the cutters and down upon the platform.

The pivots which secure the rake and reel arms in place in the lugs *e'* are held in place by means of pendent pins or bolts *g*, secured in horizontal flanges *e''*, formed on the adjacent flanges *e'* of the rake-wheel, as shown, a screw-thread and nut (shown in Fig. 7) serving to hold said pins in place, and obviating the ne-

cessity for heads or other fastenings on the rake-pivots.

The bevel-wheel H, for driving the rake-wheel, is shown in detached view, Fig. 6, provided with two or more enlarged teeth or spurs, *h*, adapted to engage with the notches *e* in the rake-wheel, the number of smaller teeth intermediate between said large teeth *h* conforming to the number of notches or teeth in the sections of bevel-wheel between the notches. This bevel-wheel is connected with and driven by a sprocket-wheel, H', mounted on a horizontal stub-axle, *h'*, secured in an arm, *b'*, in the cam plate or stand, as shown in Fig. 3.

By this arrangement it will be seen that the sockets *e* in the rake-wheel are made to serve the double purpose of sockets or teeth in the movement of the wheel, while at the same time the heel-projections of the rake and reel arms are allowed to drop therein within the periphery of the bevel-wheel when the rakes descend into the grain and sweep the platform, thus bringing the rake-head and the heel-extensions of the rakes into more compact form than where the heel-extensions project beyond the periphery of the wheel, as in the ordinary construction, and obviating all liability of said heel-extensions of the rake and reel arms becoming entangled with the falling grain.

The rake-cam may be of any usual construction. It is shown provided with a pivoted gate or switch, I, held in position for causing the arms to act as rakes by means of a pivoted latch, K, also held in place for locking the gate in position for causing the arms to act as reel-arms by means of the same spring *i*, connected with the gate and with one arm, *k*<sup>1</sup>, of the latch. (See Fig. 2.) A second arm, *k*<sup>2</sup>, projects up through the cam-plate in the path of an arm,

*l*, attached to one or more of the rake-arms, for automatically tripping said latch and releasing the gate, for causing the rake-arm, to which the arm *l* is attached, to pursue the path of a rake-arm without attention from the driver, the roller on said arm, in its passage over the heel-extension *i*<sup>1</sup> of the gate, serving to reset the gate for causing the succeeding arms to act as reel-arms.

The gate I is provided with a crank-arm, *i*<sup>2</sup>, which, together with the arm *k*<sup>1</sup> of the latch, either or both, are connected by means of a rod, cord, or cords, *m*, with a rock-shaft, *n*, and treadle-lever O, arranged in convenient position to be operated by the driver in his seat on the machine for controlling the switch or gate, as desired.

Parts of the machine not particularly described may be constructed and arranged in any usual or preferred manner.

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

1. The crown or bevel wheel forming the rake-head, or to which the rake and reel arms are pivoted, made in notched or sectional form, substantially as and for the purpose described.
2. The rake-driving wheel made in notched or sectional form, in combination with the driving bevel-wheel, provided with the enlarged teeth, arranged and operating substantially as described.
3. The pivoted rake-arms, arranged and operating in combination with the notched or sectional wheel, substantially as and for the purpose described.

WILLIAM K. MILLER.

Witnesses:

A. D. ESHELMAN,  
PAUL D. RIDER.