H. WELLS.

Improvement in Harvester Rakes.

No. 125,710. Patented April 16, 1872.

FIG. 1.

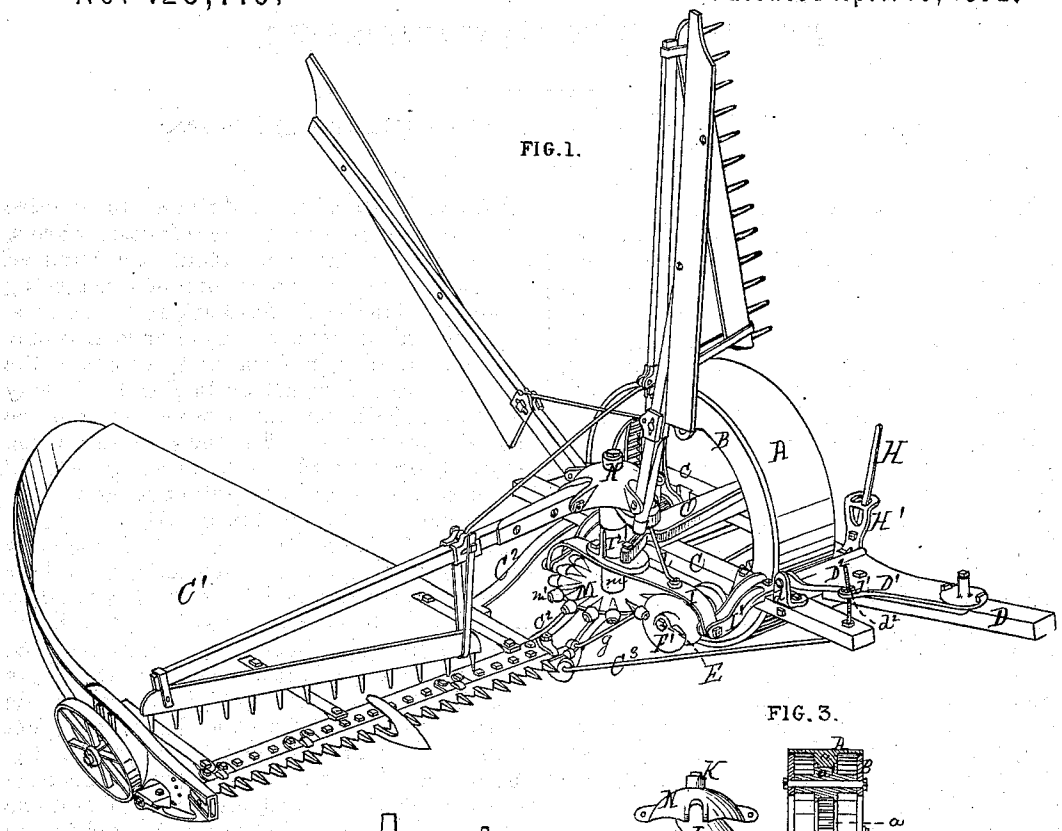

FIG. 3.

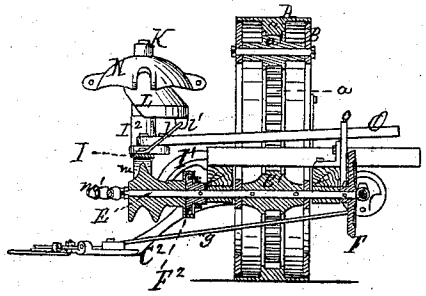

FIG. 4.

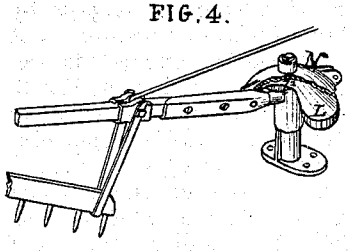

FIG. 2.

WITNESSES.

Alex. Mahon

H. A. Dowbridge

INVENTOR.

Harrison Wells

by his Attorney

A. M. Smith

UNITED STATES PATENT OFFICE.

HARRISON WELLS, OF ERIEVILLE, NEW YORK.

IMPROVEMENT IN HARVESTER-RAKES.

Specification forming part of Letters Patent No. 125,710, dated April 16, 1872.

To all whom it may concern:

Be it known that I, HARRISON WELLS, of Erieville, county of Madison, State of New York, have invented a new and useful Improvement in Harvester-Rakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is a perspective view of a harvester embracing my improvements. Fig. 2 is a side elevation taken from the stubble side of the machine. Fig. 3 is a vertical transverse section; and Fig. 4 is a detached view of the rake, illustrating the construction and operation of the supplemental cam for lifting a portion of the rakes from the platform.

Similar letters of reference denote corresponding parts in all the figures.

The invention relates to the construction of harvester-rakes and the devices for operating the same, the invention being more particularly adapted for use upon that class of harvesters sometimes known as open-wheel machines, so called because the main driving-wheel, or one of them in two-wheeled machines, is left open in the center, the cutting apparatus, platform, and rake being located upon one side of the driving-wheel, and the gearing for driving the cutters on the other, the pitman and sometimes the hinged bar of the cutting apparatus extending through the open center of the wheel. The first part of the invention consists in mounting the standard, about which the rake sweeps, in a vibrating yoke, with which is combined means, arranged within reach of the driver, for tilting said rake-standard for the purpose of elevating the rakes above the platform, in order that it may pass above the grain lying thereon, thus enabling the operator to regulate at will the size of the gavels. The invention further consists in certain details of construction, as will be fully explained.

In the drawing, A is the main carrying and driving wheel, provided with an internal spurred rim, *a*. B are the supporting flanges, between which the wheel *a* is mounted. *a'* are friction-rollers, journaled in flanges B or running upon axles fixed in the flanges. By preference I construct each of these rollers with a double tread-wheel, the disks of which shall bear upon the inner surface of wheel A, one on each side of spurred rim *a*. In practice I usually employ three of these friction-wheels, placed at a distance of about one hundred and twenty degrees apart, one of them being mounted upon the pinion-shaft, as will be presently described. C is the main or gear-frame. It is rectangular in form, and surrounds the driving-wheel A, as shown in Fig. 1. It may be made of either metal or wood, as shall be thought preferable. C^1 is the grain-platform, rigidly connected with the frame by bars C^2 and draft-rod C^3, or in any other manner common in one-wheeled machines. D is the tongue. D^1 is the tongue-plate, hinged to frame C by means of lugs *d*, one at each side, these lugs being preferably connected with each other by means of a web and secured to frame C by bolts. The tongue-plate has a projecting ear, d^1, through which a screw-standard, D^2, rising from frame C, passes. This standard is made an arc of a circle, of which the tongue-pivot is the center, and the relation between the tongue and the frame is adjusted by means of two nuts, d^2 d^2, one above the tongue and one below it. D^3 is a lifting-lever, pivoted to one of the flanges B. d^3 is a link connecting lever D^3 with the rear end of frame C. D^4 is a ratcheted standard, rising from frame C, with which lever D^3 is made to engage by means of any suitable or desired arrangement of spring-catch. E is the pinion-shaft in section lines Fig. 3 and in dotted lines in Fig. 2. It is mounted in suitable bearings in or upon frame C, as shown in Fig. 3. E′ is a spur-pinion, keyed to shaft E and gearing with spurred rim *a*. Pinion E′ is usually made in one piece with one of the double friction-rollers *a'*, and is arranged between the two disks, the disks thus serving not only to save friction but to regulate the depth of mesh between gears *a* and E′. Pinion-shaft E, in addition to being mounted in frame C, as above described, passes through bearings or perforations in flanges B, so arranged that pinion E′ shall be in mesh with gear *a;* and it will be readily seen that by this arrangement of parts drive-wheel A is free to vibrate vertically in frame C about shaft E as a center, while the frame is also free to vibrate about said shaft.

The above devices form the subject of another application filed by me of even date here-

with, and need not, therefore, be more explicitly described here.

F, Figs. 2 and 3, is a bevel-wheel, mounted on shaft E. G, Fig. 2, is the crank-shaft, mounted in suitable bearings on frame C. *g* is the pitman, driving the cutters through the open wheel. G′ is the crank-shaft pinion, feathered to the shaft, and thrown in and out of gear with bevel-wheel F by means of shipping-lever H, pivoted to lever-standard H′, Figs. 1 and 2. F^1 is a screw or worm, mounted loosely on the inner or grain end of shaft E, and connected therewith by means of a backing-ratchet, as shown at F^2, Fig. 3. I is a yoke or crane, pivoted at each end in the drooping-hangers I^1, which depend from the grain side of main frame C. I^2 is a vertical sleeve, bolted to yoke I, in which is supported the rake, the rake-standard K revolving within the sleeve, the hub of the cam-track I resting upon sleeve I^2, and the hub *m* of the worm-wheel M bearing against the lower side of the yoke. The spurs of the worm-wheel are provided with friction-rollers *m′*, which engage with worm F^1, and the construction and arrangement of parts are such that the pivots of yoke I, pinion-shaft E, and worm-wheel M are all in the same horizontal plane, so that the yoke and rake-standard may be vibrated as shall be found necessary without injuriously disturbing the working relation between the worm and worm-wheel. *l* is a brace-rod connecting the cam-track L with the yoke, for the purpose of maintaining said cam in proper position with respect to the revolving-rake. In practice I provide the upper end of brace-rod *l* with a screw-thread, and secure it in a lug, l^1, on the cam, (see Fig. 3,) by two nuts, one upon each side of said lug, so that I can adjust the position of the cam at will, whereby I can regulate the point at which the rake shall descend into the grain. N is the rake-head, keyed to and revolving with the rake-standard.

As any desired kind of rake may be substituted for that shown in the drawing it is not necessary to describe it in detail.

O is a lever rigidly attached to yoke I or to the sleeve I^2, and extending through the open space in the center of the driving-wheel to within convenient reach of the driver, whose seat (not shown in the drawing) is located on the stubble side of the driving-wheel. The free outer end of lever O is confined in a standard, *o*, Figs. 2 and 3, adjustably bolted to frame C through slot *o′*, (see Fig. 2.)

By preference I locate the driver's seat centrally of frame C, so that he can operate shipping-lever H with his hand and rake-lever O with his feet.

As the machine is drawn over the ground the rake is caused to revolve by the screw F^1, as will be readily understood without further explanation, and the rake descends in the grain, picking it up and presenting it to the cutting apparatus, the point in their revolution at which they descend being regulated by turning the cam L around upon sleeve I^2 by means of the nuts on brace *l*, as will be readily understood by all who are familiar with adjusting this class of rakes.

The rake represented in the drawing has two rake-heads, and two beaters as reel-arms, and consequently will, when the parts are in the position shown, discharge two gavels at each complete revolution of the rake; but if the kind or condition of the crop, or other circumstances should demand it, this delivery may be varied at will by the driver, who can, by depressing the free end of lever O, tilt or incline the rake-standard in such manner as to lift the rake from the platform and cause them to pass over it without sweeping the grain therefrom.

The pinion E′ is always in gear with cogged rim *a*, and hence is driven in the reverse direction when the machine is moving backward, but the backing-ratchet F^2 prevents the rake from being driven backward at such times.

Although I have shown and described my rake as applied to an open wheel machine, yet it is apparent that it can readily be attached to any ordinary harvester, as the lever O may be bent and carried around the driving-wheel instead of through it; or one of the pivots upon which the yoke vibrates may be formed in one piece with the yoke and have a short arm attached to it either horizontally or vertically, through which motion may be communicated to the yoke.

As the rake-arms are constructed in Figs. 1 and 2, both rakes deliver a gavel unless raised up by the driver; but when the condition of the crop requires it, one of the rake-arms may be provided with an extension which shall engage with a supplemental cam-track, l^2, formed below cam L, and arranged upon a circle of smaller diameter, so that it shall be out of the way of the heel-ends of the rake-heads, shown in Figs. 1 and 2, but shall act upon the extension as in Fig. 4, thus causing that arm to act as a beater only.

It will be readily seen that the yoke I is equally well adapted to be used when the rake is driven by a bevel gear-wheel in place of worm-wheel M, in which case, however, yoke I should be pivoted in the horizontal plane of the driving-pinion instead of the plane of the driven wheel.

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

1. In combination with the rake standard, about which a harvester-rake vibrates, an oscillating yoke or its equivalent, in which said standard is mounted, and a lever or its equivalent, arranged within reach of the driver, whereby he can tilt the rake at will, and thereby regulate the delivery of the grain from the platform, substantially as described.

2. The combination of the open wheel A, the main frame C, the yoke I, and the lever

O, extending through the wheel A, for tilting the rake standard, substantially as described.

3. In combination with the rake-standard, the vibrating yoke I, lever O, adjustable standard *o*, substantially as set forth.

4. The combination, in a harvester-rake, of the cams L and the supplemental cam l^2 with rake-arms of varying lengths, some of which are adapted to engage with cam L and some with cam l^2, as set forth.

In testimony whereof I have hereunto set my hand this 2d day of May, A. D. 1871.

HARRISON WELLS.

Witnesses:

THOMAS PRUDEN,

LOUIS MAYCRINK.