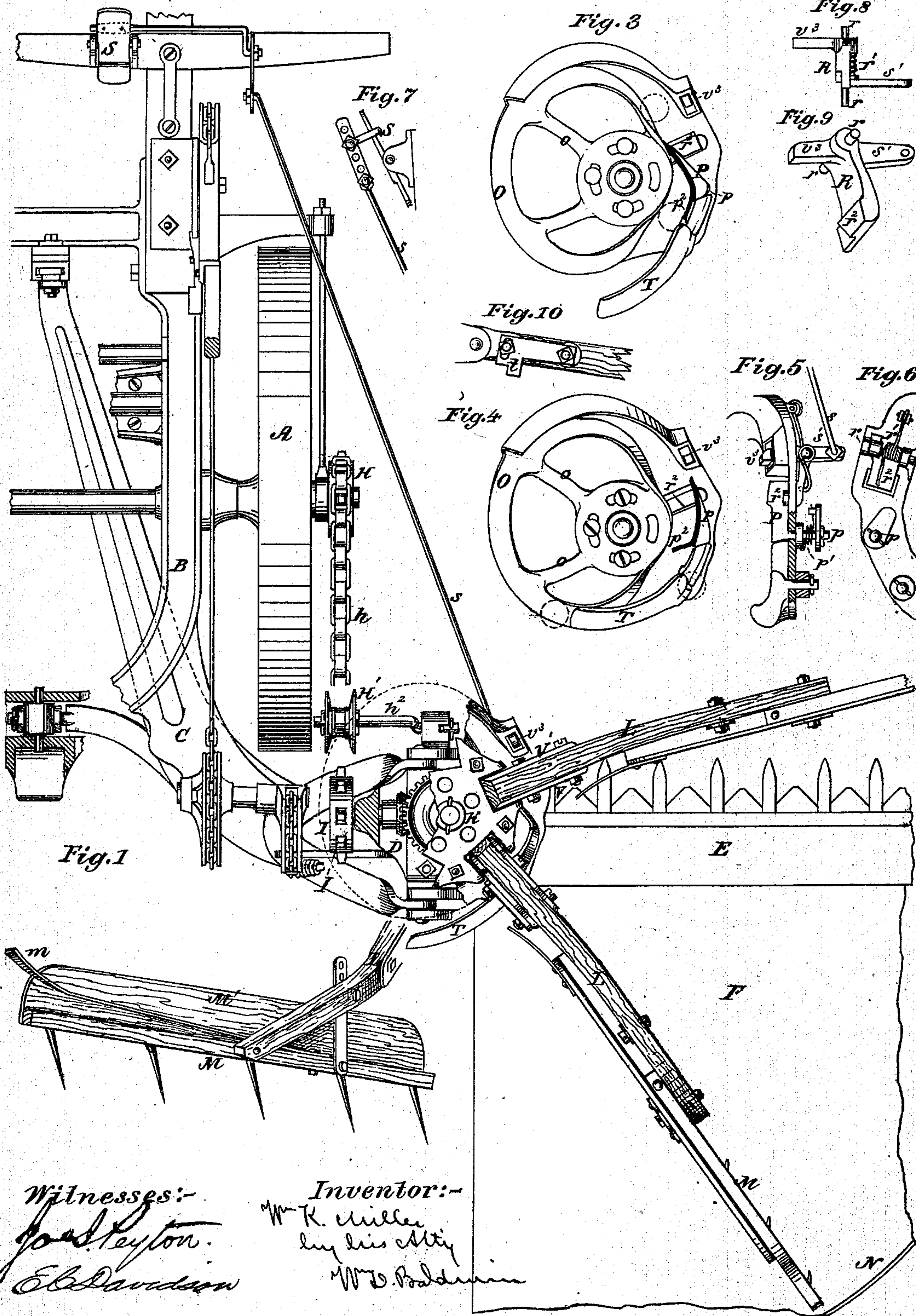


W. K. MILLER.  
Harvesters.

No. 139,596.

Patented June 3, 1873.



Witnesses:-

Jos. Peyton.  
Ed. Davidson

Inventor:-

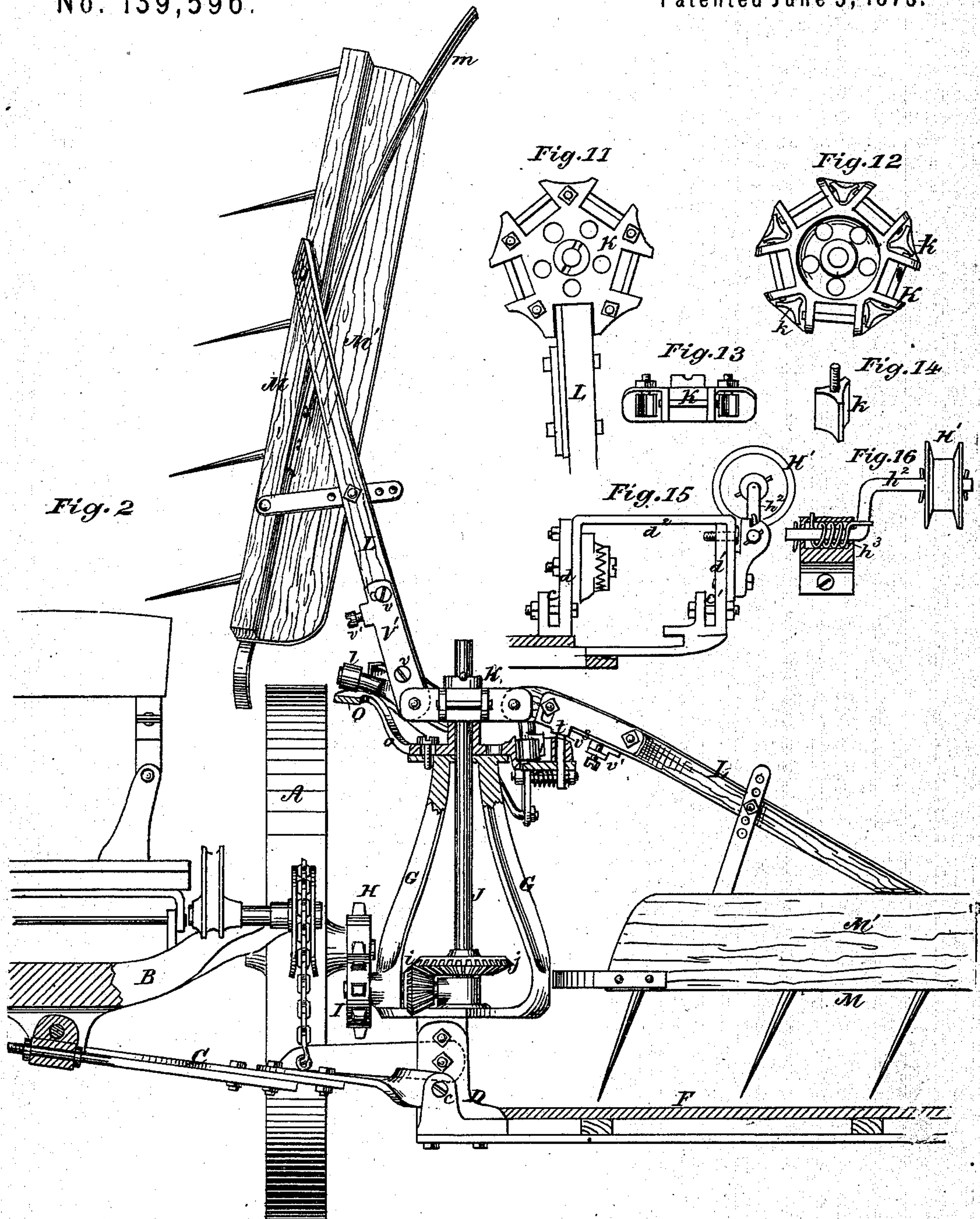
Wm. K. Miller  
by his atty  
Wm. D. Baldwin



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# UNITED STATES PATENT OFFICE.

WILLIAM K. MILLER, OF CANTON, OHIO.

## IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 139,596, dated June 3, 1873; application filed March 14, 1873.

### CASE A.

*To all whom it may concern:*

Be it known that I, WILLIAM K. MILLER, of Canton, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Harvester-Rakes, of which the following is a specification:

My invention relates to that class of automatic combined reels and rakes in which a series of revolving rake-heads have the proper rising-and-falling movements imparted to them by a guide-cam and a switch controlled by the driver, to throw any desired number of rake-heads into action to regulate the frequency of the discharge and the consequent size of the gavels.

The subject-matter claimed is hereinafter specially set forth.

The accompanying drawing represents so much of a two-wheeled hinged-joint harvester, embracing my improvements, as is necessary to illustrate my invention.

Figure 1 is a plan view, with a portion of the guide-cam broken away to show the mechanism beneath it; Fig. 2, a rear elevation partly in section; Fig. 3, a top view of the cam-guide with its switch closed and its latch open; Fig. 4, a similar view of the same with the switch open and the latch closed. Fig. 5 is a side view, and Fig. 6 a bottom view of the same. Fig. 7 is a side view showing the treadle arrangement for operating the switch. Figs. 8 and 9 are details of the cam. Fig. 10 shows the mode of connecting the rake-arm to its socket. Fig. 11 is a top view of the hub which carries the rake-arm; Fig. 12, a bottom view of the same; Fig. 13, a side view, and Fig. 14, a detail of the same; Fig. 15, a side view of the rake-supporting frame; and Fig. 16 a view of the tension-arm and pulley.

The construction of most parts of the machine is so well known to skillful builders of harvesting machines as to need no description here; moreover, the parts relating to the machine, when used as a mower, are described in another application filed simultaneously with this, and of which this is a division.

Two main wheels, A, (one only of which is shown in the drawings,) support a main-frame, B, to which a coupling-frame, C, is pivoted. A shoe, D, in turn pivoted to the coupling-

frame, has a finger-beam, E, and platform F secured to it. The coupling-frame is bifurcated and pivoted to the shoe at the points *c* *c'*, Fig. 15. Standards *d* *d'* on the shoe support a cross-bar, *d''*, on which a yoke, G, is bolted. A sprocket-wheel, H, on the main axle drives a corresponding pulley, I, (mounted on a shaft turning in bearings in this yoke,) by means of a chain, *h*, which is kept taut by being passed over a pulley, *H'*, mounted on a crank-arm, *h''*, rocking in bearings on the front of the rake-supporting frame or standard *d'*. A coiled spring, *h'''*, on this arm acts in opposition to the strain of the chain to keep it taut. A bevel-pinion, *i*, on the sprocket-pulley shaft drives a corresponding bevel-gear, *j*, on a vertical shaft, J, turning in bearings in the yoke, and carrying on its upper end a hub, *k*, Figs. 11 and 12, in which rake-arms L are pivoted to swing vertically, as usual. The triangular concave-block *k*, Fig. 14, interposed between the sockets of the rake-arms prevent their pivots from slipping out of place. In this instance five rake-arms are shown. They are slightly curved, with their convex sides in front, and incline downward toward the platform when over it. Rake-heads M are secured to these arms by adjustable connections which enable the operator to keep the rake parallel with the platform. A spring-guide, *m*, is pivoted on the top of each rake-head between the rake-arm and the rake-shield *M'*, and projects over the grain-guard or fender N on the outer edge of the platform. This guard gathers the grain and also causes the rake to ride lightly over the platform. An elbow, *l*, on the under side of the inner end of each rake-arm carries a friction-roller, which runs on a guide-track or guide-cam, O, mounted on the yoke G above mentioned. The cam guide (see Figs. 3 and 4) is supported on a spider, *o*, secured to the yoke by screws passing through elongated slots to adjust the cam in its seat.

The rollers ordinarily run on the fixed portion of the cam, as usual in rakes of this kind. A switch, P, swings horizontally on its pivot *p*, which is encircled by a coiled spring, *p'*, the tendency of which is to keep the switch open, as in Fig. 4, but the switch is closed, as in Fig. 3, every time a roller passes through it



by the roller striking a lug,  $p^2$ , on the switch. Each roller is provided with a guard-point, 1, projecting from the roller-arm in front of the switch to shove the switch aside and prevent its striking squarely against the roller. The switch, when closed, is held closed by a spring-stop, R, Fig. 9. This stop rocks on trunnions  $r$  under the cam-plate, and is kept up by a coiled spring,  $r^1$ , so that when the switch is closed by a passing roller the lug  $r^2$ , on the stop, is thrown up behind it, as in Fig. 3, and locks it until released. This release is effected in two ways; first, by means of a link-rod,  $s$ , pivoted to an arm  $S'$  on the stop, and operated by a foot-treadle, S.

The details of this treadle arrangement are clearly shown in Figs. 1 and 7, and need not be here particularly described, as its details of construction may be varied in many ways obvious to a skillful constructor.

The peculiarity of this device consists in its location on the double-tree instead of on the frame, as usual, by which means interference with other parts of the mechanism is avoided. In the next place the stop is automatically operated by means of an arm,  $v^3$ , working in a slot in the cam and projecting slightly above it. An adjustable stud,  $t$ , Fig. 10, on one or more of the rake-arms, strikes this arm  $v^3$  just before the roller on that rake-arm comes to the switch, releases the stop, and allows the switch to open in time for the roller to pass through it. Thus, if one arm only has a stud, one beater will act as a rake in each revolution without aid from the attendant, who can, however, convert as many more beaters into rakes as he chooses. The latch T operates as usual with this class of rakes and needs no special description.

The rake-arm sockets, it will be observed, consist of two vertical plates one on each side of the arm. One, V, is simply a clamp-plate or washer, the other, V', Fig. 2, is provided with screws,  $v$ , passing horizontally through vertically elongated slots in it into the washer-

plate V. This device compensates any shrinkage of the rake-arm. A set-screw,  $v'$ , passing up through an arm of the plate V', under the rake-arm, regulates its vertical adjustment in the plates, the elongated slots above mentioned permitting a slight vertical movement of the rake-arm.

The advantages of my improvements will readily be appreciated by practical men, and their operation will readily be understood from the drawings and specification. I may remark, however, that each friction-roller in turn would pass outside of the switch when closed, as in Fig. 3, thus causing the rakes to act as beaters only, but when the stud or lug  $t$  strikes the arm  $v^3$  the spring-stop releases the switch, its spring throws it open and the roller enters throwing the beater into action as a rake. The roller then strikes the lug  $p^2$ , on the tail of the switch, and closes the switch which is instantly locked by the spring-stop, and held locked until the lug  $t$  again strikes the arm  $v^3$ , or until the driver releases the stop with his foot by bearing on the treadle; when this is done, the spring throws the switch open, and it remains open until the next beater has been thrown into action as a rake, when it is closed by its friction-roller, as before described. The driver is thus enabled to regulate the size of the gavels at pleasure.

I claim as my invention—

1. The guard-point 1 on the rake-arm above and in front of the friction-roller to insure the opening of the switch, and to prevent the roller from catching on the end of the switch, as described.

2. The combination of the rake-arm, its plate V', and the arm  $v'$ , provided with means for adjusting the rake-arm vertically.

In testimony whereof I have hereunto subscribed my name.

WM. K. MILLER.

Witnesses:

GEO. MCGUIRE,  
A. A. KEITH.