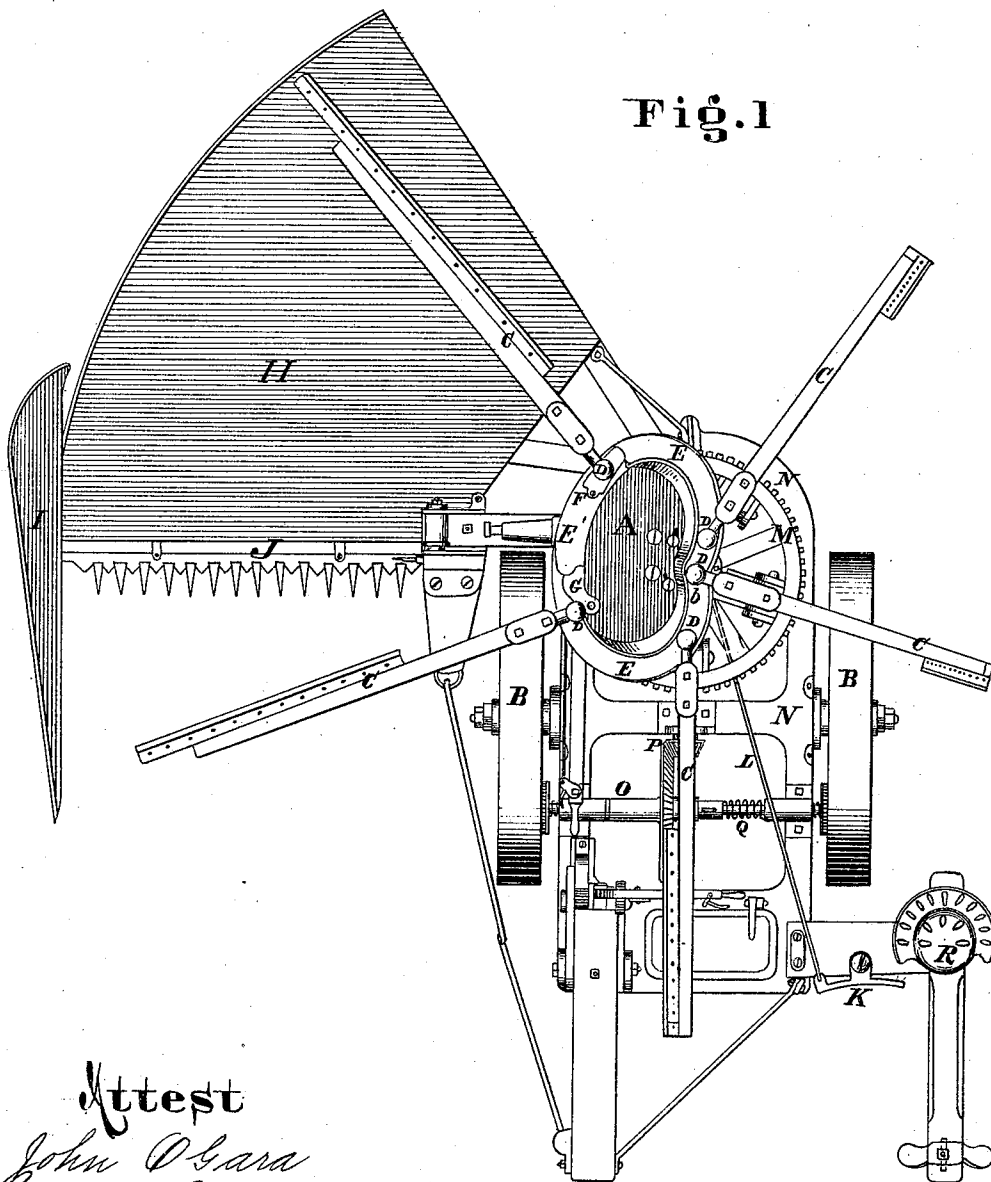


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Patented Aug. 15, 1876.

Fig.1



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No. 181,203.

Patented Aug. 15, 1876.

Fig. 2

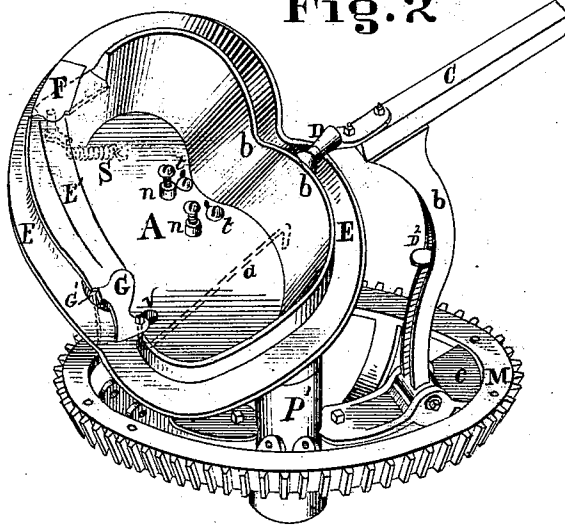
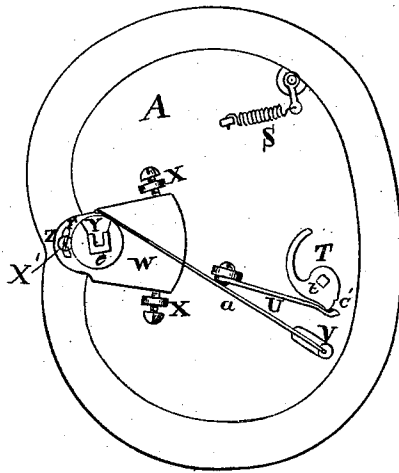


Fig. 3



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Fig. 4

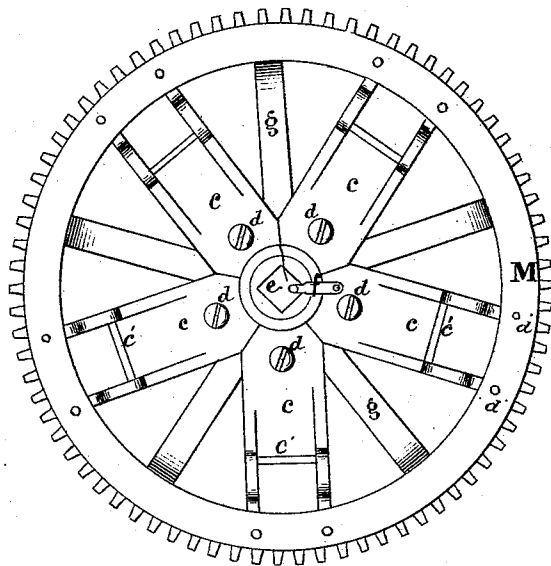
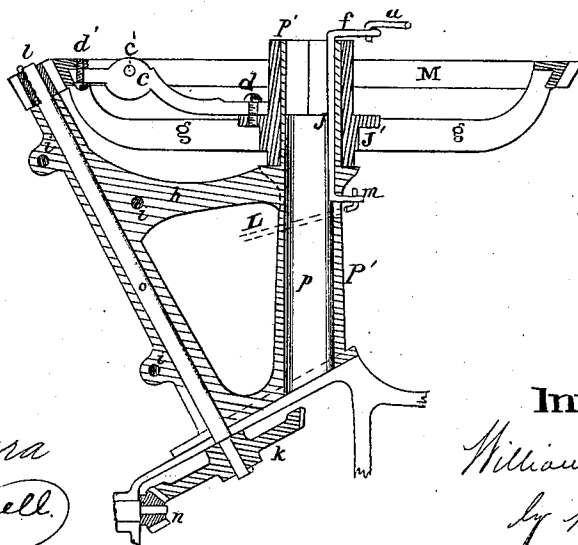


Fig. 5



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Fig. 6

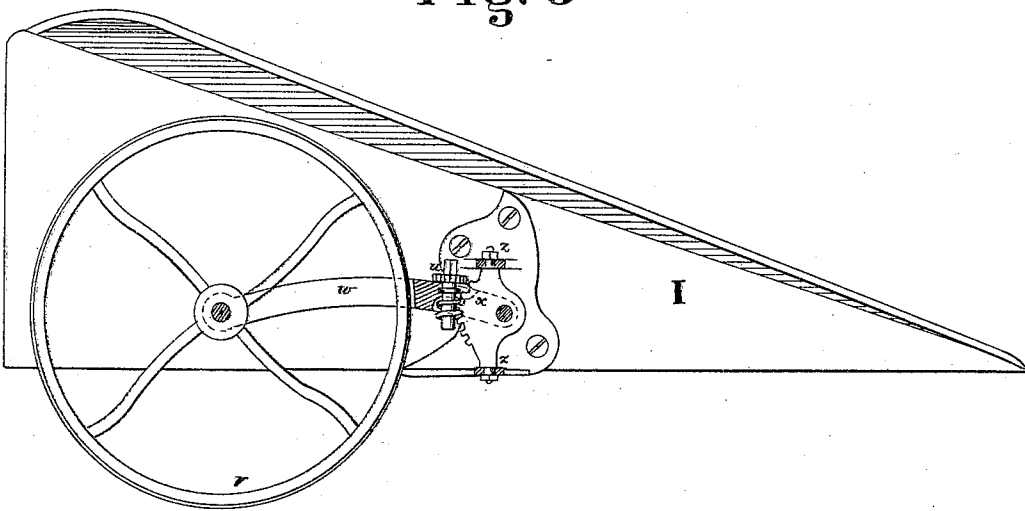
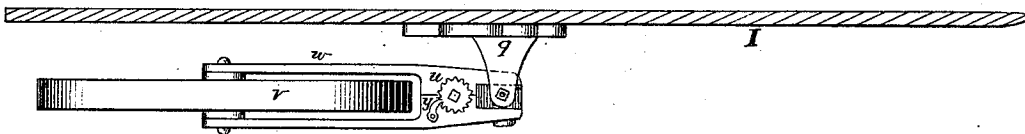


Fig. 7



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UNITED STATES PATENT OFFICE.

WILLIAM H. PRITZ, OF DAYTON, OHIO.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. **181,203**, dated August 15, 1876; application filed June 22, 1875.

To all whom it may concern:

Be it known that I, WILLIAM H. PRITZ, of Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Harvesters, of which the following is a specification:

My invention relates to that class of harvesters in which the rakes are made to act as beaters, and is so constructed as to be made to work automatically, or, under the control of the operator, to be changed at will.

My invention further consists in improvements upon the several patents granted to Robert Brown, whereby the adjustable automatic rakes or reel-arms are operated by mechanism mounted on the main frame, so as to nearly balance the same against the side draft.

Other parts of my invention will be fully understood by reference to the accompanying specification and drawings, making a part of the same.

Figure 1 represents a plan view of the machine ready for operation; Fig. 2, a perspective view of the cam-track guide and the crown-wheel, and the mode of attaching the rake-arm. Fig. 3 represents a bottom-plan view of the cam-plate with the mechanism attached thereto. Fig. 4 represents a plan view of the crown-wheel with the detachable brackets; Fig. 5, a central vertical section of the crown-wheel and mechanism on which it is mounted and operated. Fig. 6 is a side elevation of the method of attaching the caster-wheel to the outer shoe of the platform, and Fig. 7 a plan view of Fig. 6.

B B represent ordinary driving-wheels of a harvesting-machine; N N, the main frame of the machine, supported upon the axle of the driving-wheels.

It is not necessary to describe the construction of the main frame, and its gearing for operating the cutter and revolving the crown-wheel, as these are well-known devices.

A represents my improved cam-plate, which is mounted upon the stationary shaft *e*, which is inserted into socket or sleeve *p*, within the supporting-shaft P'. It may be secured or fixed into the shaft P' in any desired manner. E represents a continuous cam-track guide, near the exterior periphery of the cam-plate A.

It is of concave or of oval form, and adapted to guide the oval or ball shaped anti-friction roller D. E' represents the upper cam-track guide, over which the anti-friction rollers pass when the arms are used as reels or beaters. G represents an inclined switch, which is moved inward horizontally, as shown in Fig. 1, to carry the rake-arms around upon the lower track. Switch G is moved outwardly to compel the rake-arms moving on their supporting-roller D to pass over the upper track E', when the arms C are used as reels or gatherers. The switch G is hinged to the cam-plate A by a pivot, *t*, which passes through the cam-plate A, as shown in Fig. 3. T represents a trigger or lever, mounted upon pivot *t* on the under side of the cam-plate, the forward end C' acting as a catch in connection with the spring U. This trigger is shown in the position with the switch turned inward, so as to allow the rake-arms to be guided by the lower track E. The spring-detent U holds the switch firmly fixed in either position until extraneous power is applied to change it.

V represents a slot in the cam-plate A, through which crank-rod *a* passes, to be attached to the front end of switch G, as shown by dotted lines in Fig. 2. Rod *a* pivots into crank-rod *f*, which is placed vertically inside the socket J, Fig. 5, the lower end of crank *f* passing out of shaft P' through a slot and connects with rod L at *m*, as shown in Fig. 5. Crank-rod L pivots into the foot or shifting lever K, as shown in Fig. 1. By using rigid connecting-rods or crank-shafts to connect the foot-piece with the switch G it can be set in either position desired by the foot of the operator, who occupies seat R. This method of controlling switch G can be applied to all classes of self-rakes, and it is a very important part of my invention. The leverage of the rod is sufficient to shift the trigger T over the spring U, as switch G is turned outward or inward.

When the outer end of foot-piece K is carried backward switch G is turned inward, as shown in Fig. 1, and when the outer end is moved forward switch G is carried across the plane of track E, and the friction-roller D of the rake-arms will pass up the switch G to the upper track E', the rake-arms then acting as reels or beaters. When switch G is turned

inward, as in Fig. 1, the arm C will pass it, and the end of roller D will catch upon the point of switch G', and shut, open, or turn switch G outward across track E, so that the next arm will act as a beater unless the driver, by the foot-piece K, pulls the switch G inward, which is frequently necessary in very heavy grain.

F represents an automatic switch, which is pivoted to the cam-plate A by a pivot passing through the cam-plate A, to the lower end of which pivot is fastened a lever connecting with coil-spring S, as shown in Figs. 2 and 3. As the rake-arms moving on rollers D passing over the lower track E arrive at switch F they come in contact with switch F, and cause it to turn inward horizontally, as shown by dotted lines, Fig. 2, allowing the rake-guides to continue on unobstructed in track E. As soon as the guide-rollers D pass switch F spring S draws the switch into line with the upper track E', connecting it with the main track E. The cam-plate is fastened to its supporting-shaft *e* by means of a set-plate, W, having a hub, Y, in which shaft *e* is rigidly attached. Shaft E is shown slotted to allow rod F J to occupy a proper position within the tubular bearing of the crown-wheel M.

It is obvious that the tubular shaft P' may be grooved to allow the rods *f* to pass up inside the bearings of the crown-wheel. Cam-plate A is made adjustable either vertically or laterally, as desired.

t t represent screws passing through the cam-plate A, and connecting it with plate W. *n n* represent set-screws passing through plate A, and seating on plate W.

X' represents a screw-bolt passing through slot Z in the rear end of plate W. These screws *n n* X' adjust the plate A vertically upon the shaft *e*, so as to raise or lower and adjust it in the desired plane to compel the rake-arms and the rake-heads to pass over the platform H in the proper vertical plane. X X represent set-screws working through ears cast upon the under side of plate A and seating against plate W, to allow of the adjustment of the cam-plate A laterally with the platform H. This mode of regulating and adjusting the cam-plate A is very important, as it allows an easy and perfect adjustment of the rakes to the platform.

M, Fig. 4, represents a crown-plate with bevel-gearing meshing with pinion *l*, mounted on shaft *o*, in a well-known manner. This crown-wheel M is mounted on the tubular shaft P'. Crown-wheel M and the arms *g* connecting the rim to the hub are cast in the usual spider form. *c* represents detachable bracket-arms, two of which are shown in perspective in Fig. 2. *d d'* represent screws for bolting the bracket-arms G to the crown-wheel M. *e'* represents pivot-bolts passing through ears on the upper side of bracket *c*. C represents the rake or reel arms. *b* represents a metallic arm with a tubular bearing at the bottom, through which pivot *e'* passes, connecting the rake-arms C with the bevel-wheel

M, for the purpose of revolving the rake and reel arms. These detachable brackets G have two advantages: they are more easily fitted, and are of cheaper construction when the crown-wheel M with the brackets are made of several pieces, as shown. Again, in case of breakage of one of the brackets *c*, it can be readily duplicated at small cost.

The cam-track E and the roller D are of such location as to sustain the weight of the arm C, and the branch *b* simply imparts the motion of bevel or crown-plate M to arm C.

One feature of my invention consists in the combination of the cam-plate A with the track E, and switches G and F with the crown-wheel M, arranged upon the main frame between the plane of the driving-wheels so as to bring the weight and the strain of the operative parts directly in line with the center of the machine, so as to balance the same against side draft, or nearly so. Several important advantages will result from this construction and location of the parts.

The cam-track E can be of larger circumference than it would be when placed nearer the platform of the machine. Again, by locating the cam-track above the center of the machine, the arms will approach the cutter-bar and platform at a less angle than when the cam-track is placed outside of the driving-wheel, and, consequently, the grain can be laid on the platform more evenly. Again, this method allows the arms, when acting as reels, to dip into the grain further in front of the cutter to pick up down grain, and, moving on a larger plane, twist or tangle the grain much less than if moved in the smaller radius, allowing the switches G and F to be placed further apart. While one of the rakes is traveling upon the track E', the next succeeding arm will regularly pass over the lower track without interference from the switches. Thus the position of one arm is entirely independent of all the others.

Again, the rake-arms being longer, and the cam-plate occupying this position, the arms of the rakes are consequently lengthened, and they can be much more easily adjusted to revolve in any desired plane. This arrangement of the cam and crown plate and the switches allows the arm C to be used alternately or continuously either as rake or reel arms, as before described, or to be changed from one to the other at the will of the operator.

When it is desired to have one of the arms C act as a rake, and the other as reel gatherers or beaters, a catch, D², is placed upon the arm *b*, as shown in Fig. 2, which engages with lever or trigger T, when it is in the position shown in Fig. 3, and draws switch G inward, so that the next succeeding arm C will pass over track E and act as a rake, without adjustment from the driver.

By using the projection D² on one arm only, the arm succeeding it will act as a rake, and all the others as beaters. It is obvious that every other one or two of the entire set may

be thus made to act as rakes, and the rest as beaters, without adjustment from the driver.

I represents the divider on the outer end of the platform; *z*, a bracket bolted to the divider. *x* represents a pivoted rack-bar; *w*, a stock bolted to the ratchet-bolt *x* supporting the castor-wheel *v* in the usual manner. *u'* represents a worm meshing with the teeth of rack-bar *x*; *u* a ratchet-wheel mounted on the top of worm *u'*; and *y*, a pawl engaging with the teeth of the ratchet *u*.

The top of the worm-shaft *u'* is shown as square to fit a socket or wrench, by which worm *u'* is turned to raise or lower the platform, as shown in Figs. 6 and 7. The pawl *y* prevents the rotation of worm *u'*, and retains the platform in any desired position.

Pawl *y* is disengaged from the ratchet *u* when it is desired to raise or lower the divider I, by which the platform is supported.

I do not intend to limit myself to the use of the peculiar crown-wheel shown in claims where it is made an element in combination with other devices.

The various devices I have shown I deem to be the best means for carrying out the principal objects of the different features of my invention.

I claim--

1. The cam-plate A, provided with tracks E E' and switches G H, in combination with crown-wheel M, and revolving reel or rake arms C, arranged in connection with each other and mounted upon the main frame, substantially as herein set forth.

2. The cam-plate A, provided with the switch G and trigger T, in combination with

the spring-detent U, substantially as herein set forth.

3. The crown-wheel M, with the detachable supporting-arms C, constructed substantially as herein set forth.

4. The combination of the cam-plate A and its automatic switches G and F, and a crown-wheel, with the reel or rake arms C, having the arm *b* and roller D, all arranged upon the main frame of the machine, as herein set forth.

5. The projection D² on one or more of the rake-arms, in combination with cam-plate A, provided with switch G, trigger T, and spring-detent U, substantially as herein set forth.

6. Switch G, spring-detent U, trigger T, in combination with the foot-lever K and its connecting crank-rods, substantially as herein set forth.

7. Cam-plate A, provided with plate W and connected to the shaft by means of set-screws X X and *t t*, substantially as herein set forth.

8. Cam-plate A, connected to plate W by means of screws, in combination with adjusting-screws *z* and *n n* for vertical adjustment, substantially as set forth.

9. The combination of the ratchet *u*, pawl *y*, worm *u'*, rack *x*, and castor-wheel mounted on fork-shaft *w*, substantially as herein set forth.

In testimony whereof I have hereunto set my hand this 16th day of June, 1875.

WILLIAM H. PRITZ.

Witnesses:

JOHN O'GARA,
E. E. WOOD.