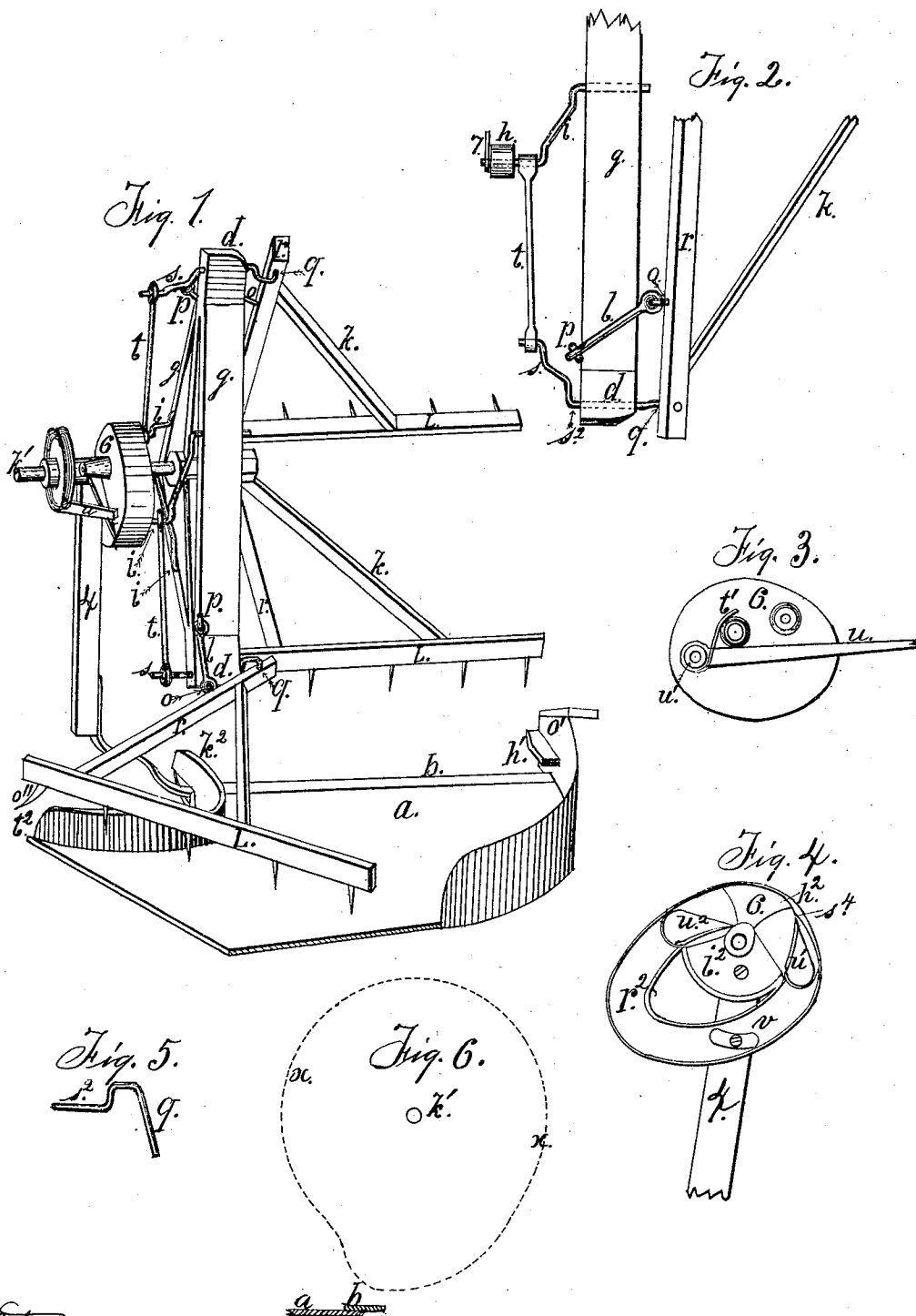


H. H. BRIDENTHAL, Jr.

HARVESTER-RAKE.

No. 170,433.

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Witnesses
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IMPROVEMENT IN HARVESTER-RAKES.

Specification forming part of Letters Patent No. **170,433**, dated November 30, 1875; application filed August 4, 1875.

To all whom it may concern:

Be it known that I, HARRY H. BRIDENTHAL, Jr., of Latrobe, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Harvester-Rakes; and I do hereby declare the following to be a clear and exact description thereof, that will enable others skilled in the art to which it appertains to make and use the same, reference being had to accompanying drawings, forming a part of this specification.

My invention relates to that class of harvester-rakes which reel the grain onto the platform, whereby any one or all of the fans may be made to deliver a gavel to the stubble at the will of the operator, and out of the way of the team on its next round.

Figure 1 of the drawing is a perspective view of my improved machine, and Fig. 2 is a plan view of a detached part thereof, showing the joints or hinges of the rake-arms. Figs. 3 and 4 are vertical elevations of opposite sides of the cam-grooved plate, which governs the action of the rakes or fans, showing its arrangement of gates, switches, and operating-lever. Fig. 5 is a plan view of the rake-operating rock-shaft. Fig. 6 is a profile, showing the path of the fans relative to the cutter-bar *b*.

Similar letters of reference where they occur in different figures refer to like parts of the machine in all of the drawings.

The object of this invention is to improve the construction of harvester-rakes, making them more effective in their operations, and adapting them to be used on front or rear cut harvesters. It consists in the combination of a series of rakes pivoted at two points to the ends of a series of radial arms or their equivalent, and in the combination and arrangement of various elements, hereinafter described and specifically claimed.

In the drawing, *a*, Fig. 1, represents the grain-platform, and it is provided with vertical sides, which rise from the outer and inner edges thereof, and the said inner and outer edges are curved so as to correspond respectively to the paths of the inner and outer ends of the rake-heads as they sweep the gavel to the stubble. The post 4 is, by any suitable means, strongly connected to the inner shoe

of the harvester, or to the inner forward corner of the platform *a*. To the top of the said post 4 is securely, but adjustably, attached the cam-grooved plate 6, by means of screws or bolts, one of which passes through the slot *v*. The shaft *K'* revolves within suitable bearings in the plate 6, and its inner end is provided with a driving-pulley, or any device whereby motion may be transmitted to it from the gearing of the harvester. To the outer end of the said shaft *K'* is secured a suitable hub, to which is connected the series of arms *d*, which may be of such length as to reach nearly to the finger-bar *b*, and their outer ends are provided with bearings, in which are secured the rock-shafts *s*². The cranks *s* of the rock-shafts *s*² are connected by means of the rods *t* to the friction-rollers *h*. The said rollers *h* are carried around within the groove of the plate 6, with the arms *d*, by the rods *i*. Hence the motion of the rock-shafts *s*² is made to correspond with the groove in the guide-plate 6, as the before-mentioned arms revolve with the shaft *K'*.

To the outer ends *q* of the rock-shafts *s*² are pivoted the rake-arms *p* by means of long bearings. The said bearings are placed at right angles with the rake-arms, and at an obtuse angle relative to the rock-shafts *s*², as shown in Fig. 5. A short distance from the bearings *q*, on the rake-arms *r*, are secured the eyes *o*, which are, by means of the links *l*, connected to similar eyes attached to the arms *d* a short distance from the rock-shaft bearings, and nearly in line with the said bearings and the rake-heads, when the rakes are folded back, as shown in Fig. 2.

By this construction the motion of the rake-arms about the bearing *q* is governed by the links *l*, and their motion is otherwise governed by means of the cranks *s* and the rollers *h* within the stationary cam-plate 6.

To the outer ends of the rake-arms *r* are secured the rake-heads *L*, which are further supported by the secondary arms *k*.

The number of rakes or fans may be varied to suit the surrounding circumstances. I find by experience that four arms and rakes give the best results generally.

The arms *d* are supported by the braces *g*, which, when three arms are used, are provided

with bearings for the reception of the rods i . When four arms are used, the said rods are pivoted to the next arm forward, so as to bring the rods t i at, or nearly at, right angles relatively when the rakes are folded. To the outer divider-board is secured, just over the finger-bar, the board or shelf h' , and has for its purpose to prevent the rakes from falling too low, thereby bringing the teeth into the knife. By the ends of the heads sliding over the said shelf, the opposite ends of the rakes are similarly protected by the inner side, which is just the height of the length of the rake-teeth, and the rake-heads are made somewhat longer than the width of the platform, so that one pin in the end of the said head straddles the inner side, which, therefore, serves as a guide to steady the rake as it sweeps the gravel off. The plate 6 is provided with two grooves, r^2 and i^2 , which are provided with the gates w^1 and w^2 . The gate w^2 is loosely pivoted to the guide-plate 6, and serves as a bridge to conduct the rollers h from the outer groove r^2 to the inner groove i^2 . The gate or switch w^1 is attached to the end of a short shaft, suitably provided with a bearing within the plate 6, and to the opposite end of the said shaft is secured the lever u . The switch is held in the position shown in Fig. 4 by means of the spring t' , Fig. 3.

The part h^2 of the groove i^2 is somewhat cam-shaped, or provided with a slight projection, which causes the rakes to drop gradually as they near the finger-bar, and when they are about to pass the said finger-bar the rollers h strike the projection s^4 , causing the said rakes to rise vertically, following a path shown by the dotted lines x x , Fig. 6, thus enabling the machine to gather broken and down grain.

The operation of my machine is substantially as follows: The grain is reeled onto the platform, as before described, the friction-rollers following the inner path or groove i^2 . A gavel having been thus gathered, the operator depresses the end of the lever u , raising the switch w^2 , and allowing a roller to pass from the inner to the outer groove, which allows the corresponding rake-head to drop to the platform, the shelf h' and the inner side guiding the said rake, as before described, and the crank s prevents it from rising. The gavel is thus swept from the platform. The links l being attached to the arms d above

the centers of rotation of the rake-arms about the bearings of the rock-shafts s^2 , the said rake-arms are caused to swing around horizontally as they move rearward along the platform, both ends describing the arc of a circle, thereby carrying the grain or gavel away from the standing grain. The rollers h pass around the cam-groove r^2 , depressing the gate w^2 , pass into the inner groove i^2 , thereby bringing the rake to its first position, where it serves as a reel until another gavel is collected upon the platform, when the operation is repeated by any of the rakes or fans, in the manner described.

When the rakes are folded the bearings of the rock-shafts s^2 , and the eyes o and p being nearly in line, the rake-arms are therefore but little influenced laterally by the links l . Hence, in reeling in the grain the rakes fall and rise nearly parallel with the plane of the arms d , while they are otherwise held rigidly in position.

To the end of the roller-bearing p^1 is rigidly connected a wedge-shaped block, 7, and it has for its purpose to prevent the end of the switch from striking the roller fairly, as may happen in depressing the lever while the machine is in motion, and thereby causing breakage.

The object in having the bearings q at obtuse angles relative to the bearings of the rock-shafts s^2 is to allow the rake-heads to swing horizontally around relative to the grain-platform a as they sweep the gavel therefrom. The guide-plate 6, being provided with the slot v , thereby enables the said plate to be adjusted circumferentially, so as to bring the rakes to their proper position relative to the rear end of the platform, and permitting the rakes to be thrown forward, or adjusted to different heights on the post 4.

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

The combination of the cam-groove plate 6, rods i t , arms d , links l , rock-shafts s^2 , swinging arms r K , and rakes L , substantially as and for the purposes herein specified.

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Witnesses:

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