4 Sheets--Sheet 1.

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Harvester-Rake.

No. 161,723. Patented April 6, 1875.

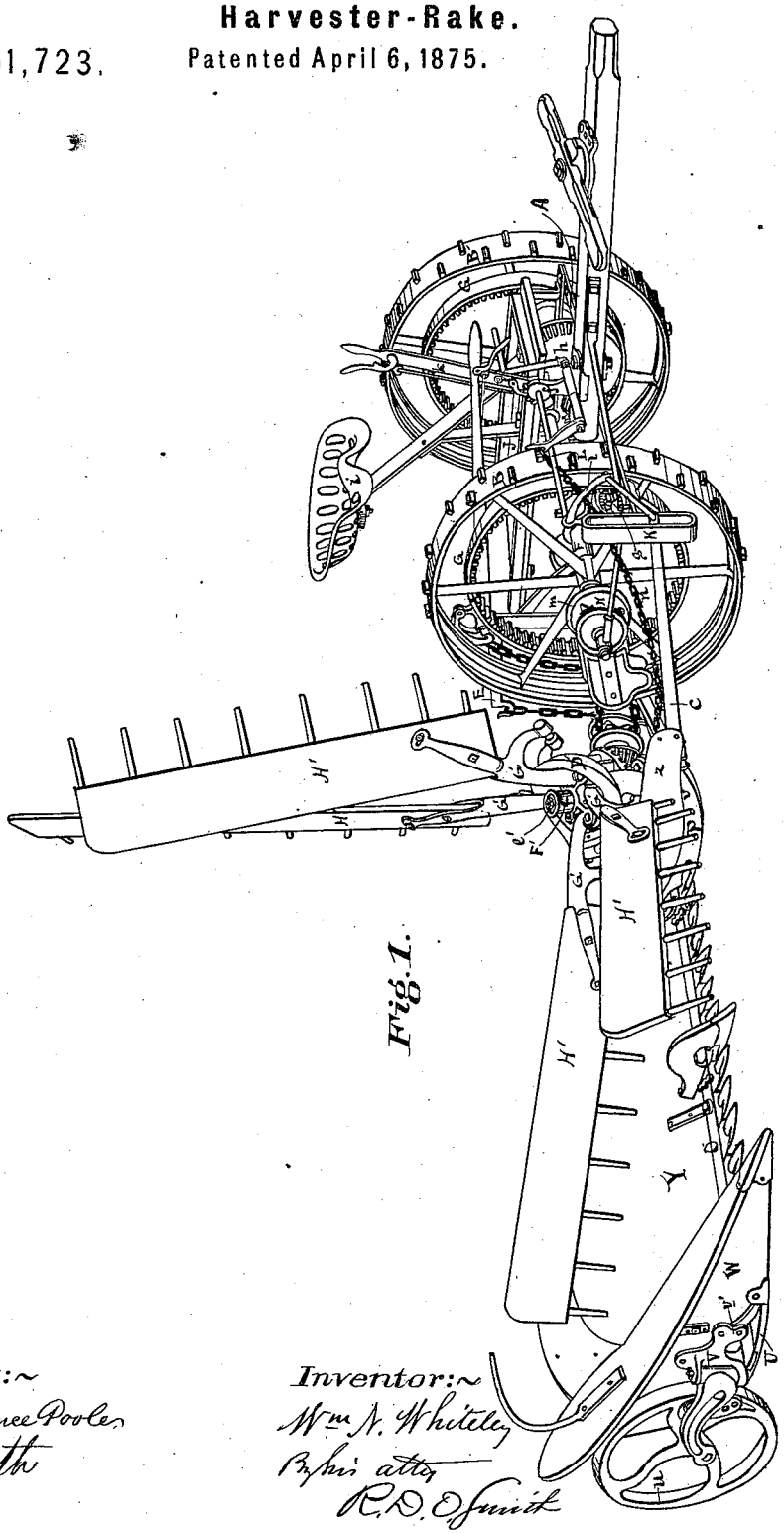

Fig. 1.

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Fig. 11.

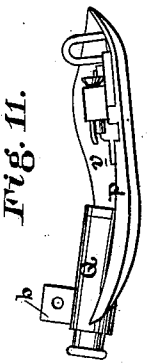

Fig. 9.

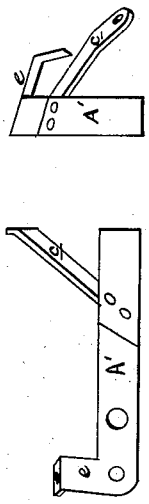

Fig. 2.

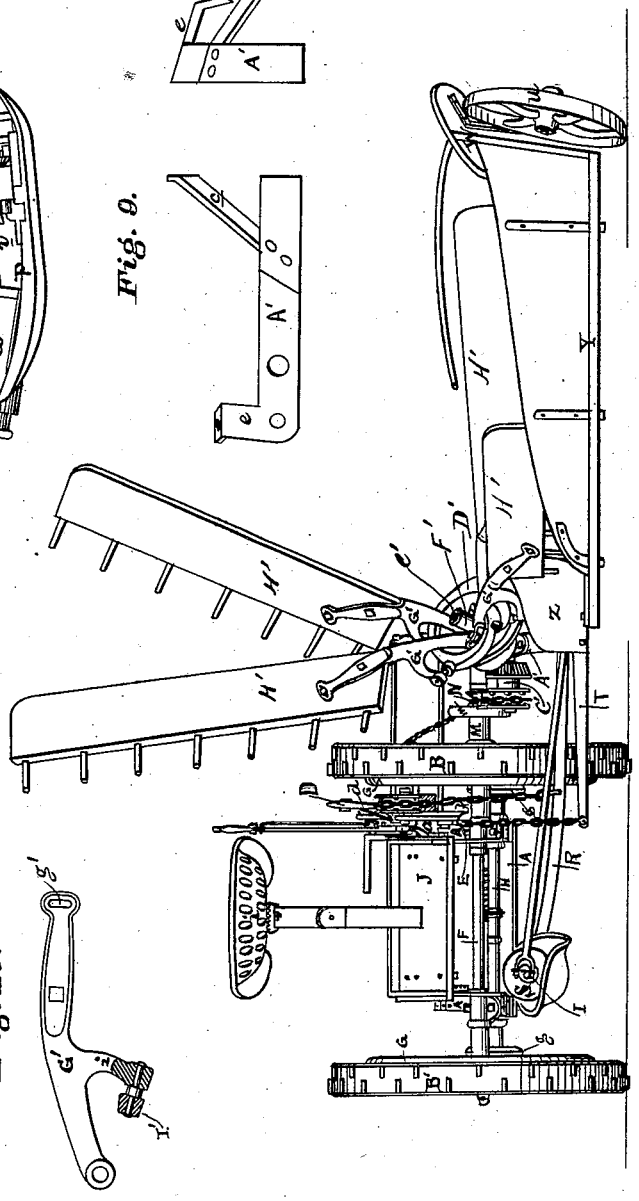

Fig. 10.

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Fig. 6.

Fig. 12.

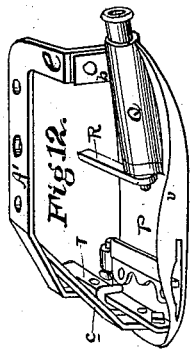


Fig. 3.

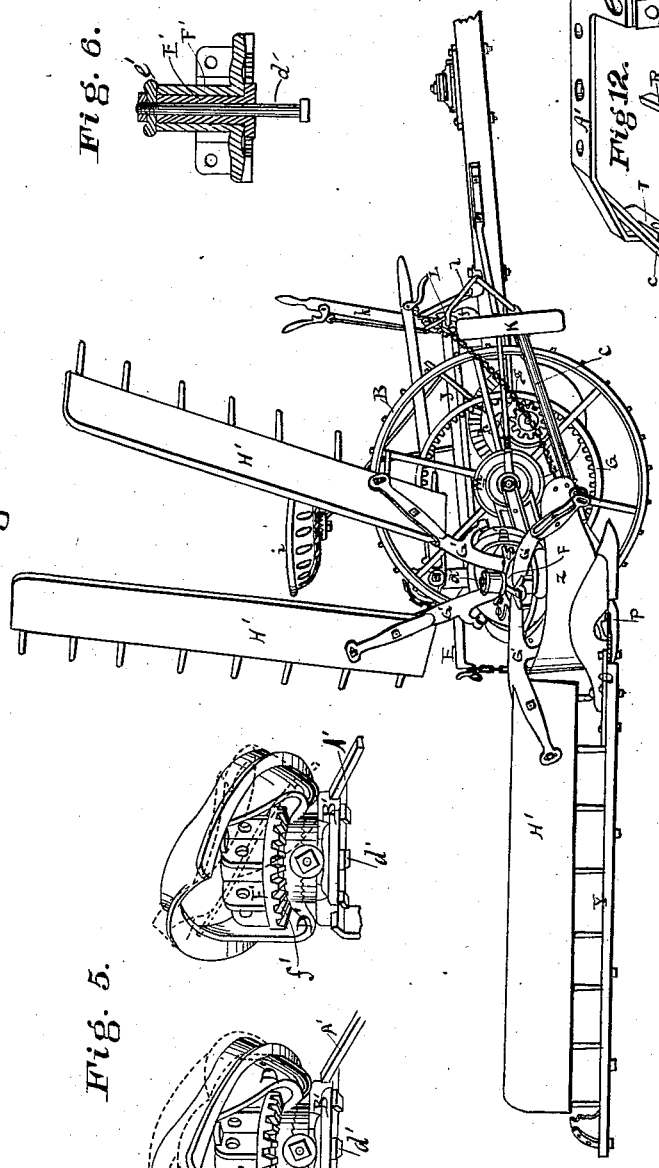
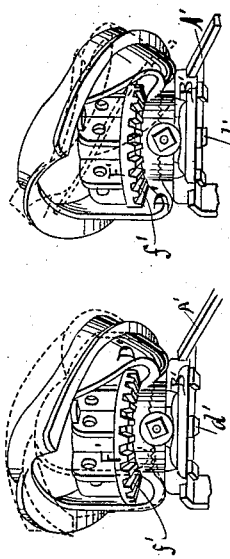


Fig. 5.



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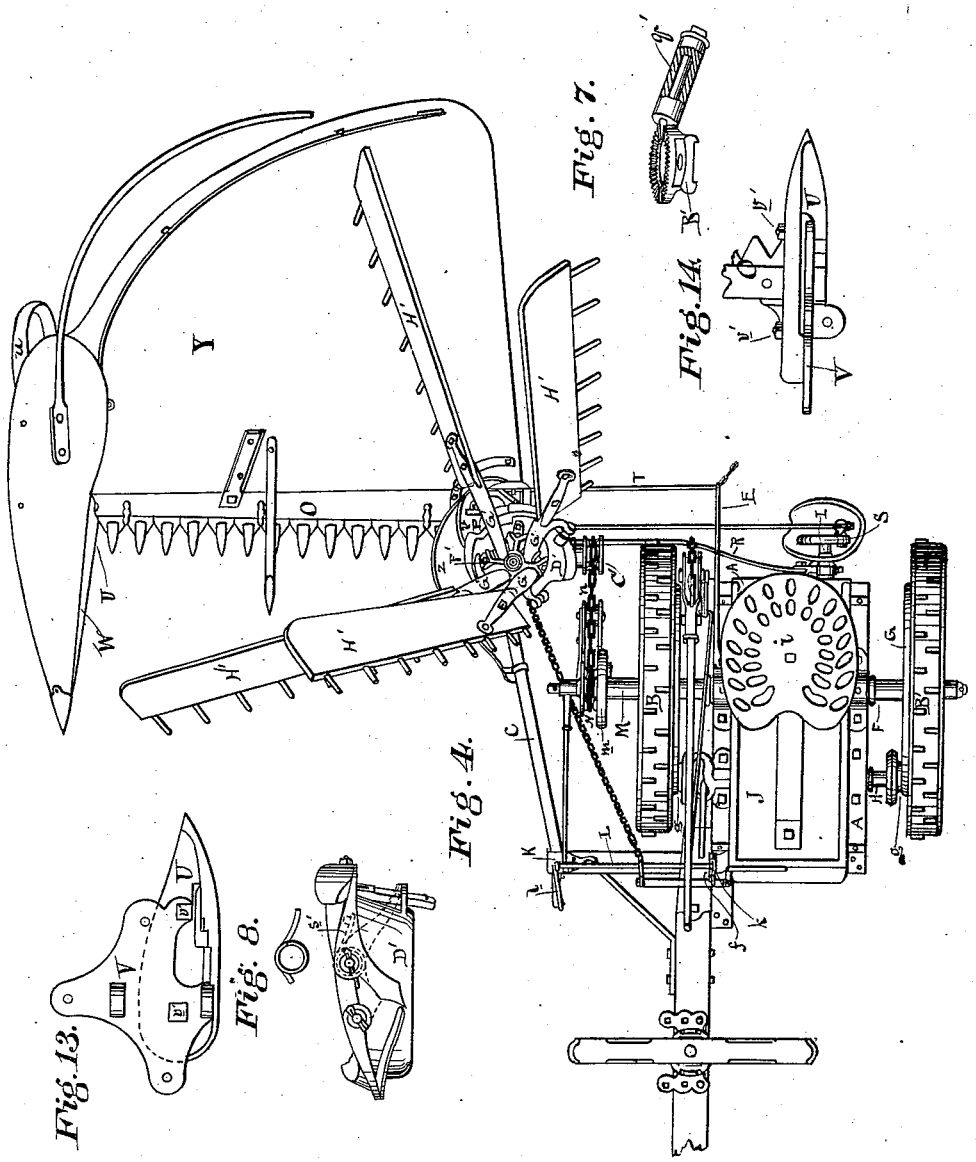

Fig. 4.

Fig. 7.

Fig. 14.

Fig. 13.

Fig. 8.

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UNITED STATES PATENT OFFICE.

WILLIAM N. WHITELEY, OF SPRINGFIELD, OHIO.

IMPROVEMENT IN HARVESTER-RAKES.

Specification forming part of Letters Patent No. **161,723**, dated April 6, 1875; application filed April 23, 1874.

CASE A.

To all whom it may concern:

Be it known that I, WILLIAM N. WHITELEY, of Springfield, in the county of Clark and State of Ohio, have invented a new and useful Improvement in Harvesters; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my machine from the front. Fig. 2 is a rear elevation of the same. Fig. 3 is an inner-side elevation. Fig. 4 is a plan; Fig. 5, two elevations of rake-cam, &c., showing adjustments of the same. Fig. 6 is a vertical central section of the rake-stand; Fig. 7, sectional elevation of the base-plate and pinion-stud for the rake-cams; Fig. 8, elevation of rake-cam, showing switch; Fig. 9, plan and elevation of rake-stand bridge; Fig. 10, sectional elevation of rake-arm. Fig. 11 is a side elevation of the inner shoe. Fig. 12 is a perspective view of the inner shoe and rake-bridge. Fig. 13 is an elevation of outer shoe. Fig. 14 is a plan of the same.

This invention relates to that class of harvesters known as two-wheeled double-jointed machines, and more particularly to improvements in the mounting and operation of the reel-rake.

That others may clearly understand my invention, I will particularly describe it.

The main frame is rectangular, and is composed of bars A A of wrought-iron, firmly bolted or riveted together at their intersection. The main frame A is supported by two supporting and driving wheels, B B′, mounted upon a stationary axle, F. Said wheels are provided with internally-geared rims G G, which mesh with and actuate pinions *g g* on a counter-shaft, H, whereby motion is communicated by bevel-wheel *h* to the cutter's crank-shaft I. A foot-board, J, is mounted upon short legs above the main frame A, to support the driver and his seat *i* while the machine is being operated. Secured to the inner end of the front bar of the main frame A is a plate, K, folded so as to form a long vertical slot to receive the front end of the drag-bar C, and permit the same to be moved up and down, as may be required, to adjust the points of the guards and cutters. Said drag-bar is connected at its front end with, and controlled by, a rock-shaft, L, and connecting-rod *l*, said rock-shaft being operated and controlled by a hand-lever, *k*, with a latch-pawl engaging with the segment-rack *f*. At the inner end of the main axle F there is a mounted long sleeve-hub, M, the end of which is notched to engage with the spokes of the wheel B. At the outer end of this sleeve is a recessed flange or pawl case, *m*, into which projects a ratchet on the end of the sprocket-wheel N, whereon the rake-chain *n* is placed, and motion transmitted to the rake and reel. The cutting apparatus O is secured at its inner end to a shoe, P. At the rear end of the shoe P, and projecting laterally therefrom, is a brace or arm, T, rigidly secured to said shoe. This brace may be removed from said shoe when the machine is fitted for mowing; but, when fitted for reaping, the shoe is raised from the ground, and the outer end of said brace is attached by a chain to the rear end of the brace E. The center of suspension and of motion of the cutting apparatus, as its outer end rises and falls with the undulation of the ground over which it passes, is thereby transferred from the rear end of the drag-bar C to the end of brace T at a point between the planes of the supporting-wheels. At the outer end of the cutting apparatus there is a shoe, U; and when the machine is used for reaping said shoe is carried above the ground by the caster grain-wheel *u*. A wooden divider-board, W, is also placed at the outer end of the cutting apparatus. The grain-platform Y is secured to the rear edge of the finger-bar, and to the divider W, in the usual manner, and is removed when the machine is arranged for mowing. The cut grain is removed from the platform by a revolving reel-rake mounted upon a bridge-plate, A′, the front end of which is bolted to a lug, *b*, which is cast with, and projects upward from, the sleeve Q at the front end of the shoe P, (see Fig. 12,) and the rear end is bolted to the arm T, with a lateral brace, *c*, extending to or beyond the middle of the shoe P. The bridge A′ is made with a lateral offset, as at *e*, so that the reel-shaft is placed between the plane of the wheel B and

the drag-bar C, and the central part of said bridge, upon which said reel-shaft is placed, is inclined outward, so that said reel-shaft has a corresponding inclination away from the plane of the wheel B. The reel-shaft is inclined in this way for the purpose of more effectually carrying the rake and reel-beaters clear of the wheel B, and of the driver on his seat, without cramping the rake-arms, by causing them to move upward on a line nearly or quite parallel with the axis of the reel-shaft. Upon the middle portion of said bridge there is firmly bolted a plate, B′, and said plate has a lateral arm, *q′*, upon which the sprocket-wheel or pinion C′ is mounted. I prefer to make said arm *q′* tubular, and pass a clamping-bolt through it, the nut on the outer end of which will retain said sprocket-wheel C′ in place.

The top of the plate B′ is provided with radial serrations, which engage with corresponding serrations on the bottom of the rake-cam D′, so that a single central bolt will effectually hold the said cam in whatever adjustment it may be placed, and any change in the adjustment may be made with corresponding ease. The bolt *d′* passes through the center from which the said radial serrations emanate, and also through a tubular or sleeve bearing, E′, which is placed above the cam-guide D′ as a bearing for the revolving rake and reel-carrier F′. When said carrier F′ is placed upon said sleeve-bearing E′ a cap-plate, *e′*, is placed on the top of said bearing, and the screw-nut of the bolt *d′* then not only binds said cap, sleeve, cam and base plate together firmly, but the cap *e′* prevents the removal of the carrier F′ from its bearing.

The carrier F′ consists of a base-plate, the under side of which is provided with cogs to form a bevel-gear wheel, *f′*, which meshes with the bevel-pinion of the sprocket-wheel C′, and is actuated by said pinion. Above said base-plate there are four or more pairs of parallel flanges, between which the rake-heads G′ are pivoted, so that they may rise and fall in radial planes.

The cam-guide is similar to those heretofore used with rakes of this character with a switch, *s′*, which may be opened either automatically or at the will of the driver, and either one of the several beaters thereby caused to act as a rake.

By placing the rake carrier and cam so near the level of the grain-platform, and by its inclination outward, I am enabled to attach the beaters H′ directly to the rake-heads G′, the latter being bifurcated at their outer ends to receive the ends of the beaters, which are adjustable by means of transverse slots *g′* in the end of said heads G′. A friction-roller, I′, is mounted upon an arm, *i′*, pendent from the head G′. Said roller traverses the cam-guide, and its axis, if prolonged, would cut the axis of the pivot-bolt upon which the head G′ moves, so that whatever may be the curvature of said guide there will be no slip of said roller.

The shoe P is constructed with a flange or rim, *v*, turned up along its outer edge, and made continuous from front to rear end with an orifice for the passage of the cutter. This flange or rim not only stiffens the shoe to some extent, but it forms a good and convenient foundation for the lower edge of the metallic shield Z, which is attached to the front of the drag-bar and passes around the outer side of flange *v*, and is secured to the rear end of the bridge A′, to prevent the grain upon the platform from becoming entangled with the rake-arms and the cam-switch, &c.

The arm of the grain-wheel *u* is jointed to the bracket-plate V, which, in turn, is bolted directly to the flange of the shoe U by bolts *v′ v′* in front and rear of the shoe independent of the fastening of the divider W. The bracket V is bolted directly to the shoe, and the latter therefore sustains all the strain of the grain-wheel, and none of it comes upon the divider. The divider is bolted to the bracket and not to the shoe, and therefore it is supported by said bracket, and the removal of the bolts *v′ v′* serves to detach the divider from the cutting apparatus also.

Having described my invention, what I claim as new is—

1. The rake-supporting arch or bridge A′, constructed with a lateral offset, *e*, projecting outward, and oblique top surface, substantially as shown and described.

2. The base-plate B′, constructed with a depressed seat for the bridge-plate A′, a radial serrated seat for the rake-cam, and a spindle-stud, *q*, projecting laterally and slightly downward for the rake-driving pinion, all as shown and described.

3. The rake-arm G′, jointed at its inner end to the carrier F′, and bifurcated at its outer end, to receive the end of the beater H′, and provided with a curved slot, *g′*, at its outer end for the reception of an adjusting clamp-bolt and a pendent arm, *i*, bearing a roller, I′, to traverse the arm D, as shown and described.

4. In combination with the base-plate B′, cam D′ resting thereon, and each with corresponding radial serrations, and the revolving carrier F′, the sleeve-journal E′, cap *e′*, and bolt *d′*, as and for the purpose set forth.

5. The rake-bridge A′, constructed with a lateral offset, as described, and attached at its front end to the lug *b* and at its rear end to the arm or stiffener T, as set forth.

6. In combination with the shoe U, the grain-wheel bracket V, bolted directly thereto at its front and rear, and the divider W, bolted only to said bracket, as set forth.

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Witnesses:
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R. D. O. SMITH.