H. R. HAWKINS.

HORSE HAY-RAKE.

No. 187,627. Patented Feb. 20, 1877.

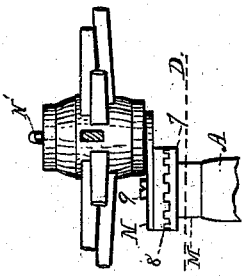

Fig. 4.

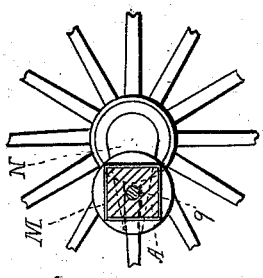

Fig. 5.

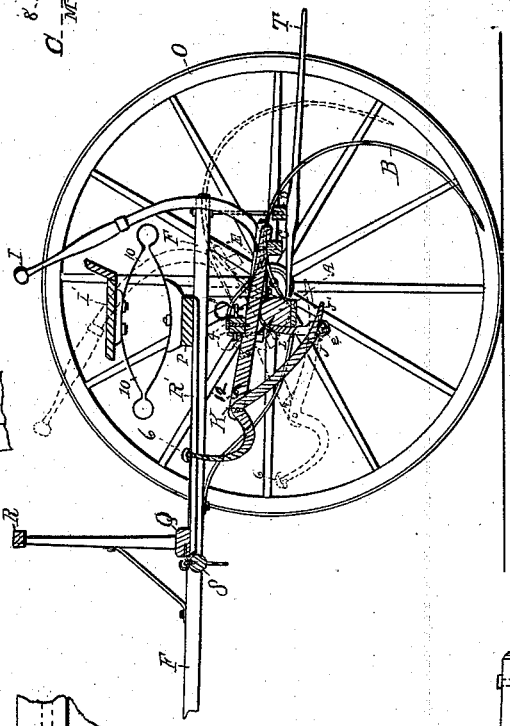

Fig. 2.

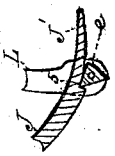

Fig. 6.

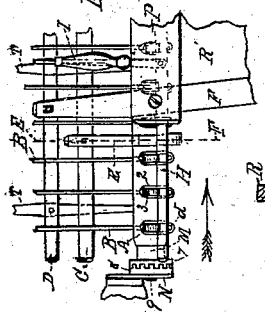

Fig. 7.

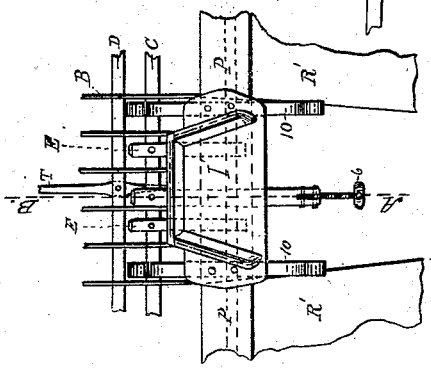

Fig. 1.

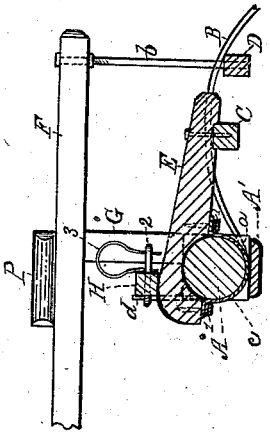

Fig. 3.

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UNITED STATES PATENT OFFICE.

HORACE R. HAWKINS, OF AKRON, OHIO.

IMPROVEMENT IN HORSE HAY-RAKES.

Specification forming part of Letters Patent No. **187,627**, dated February 20, 1877; application filed May 31, 1875.

To all whom it may concern:

Be it known that I, HORACE R. HAWKINS, of Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Horse Hay-Rakes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings forming a part of this specification, and in which—

Figure 1 represents a top or plan view of the center part of the rake. Fig. 2 represents a vertical section on line A B, Fig. 1. Fig. 3 represents a vertical section through the axle and one of the arms, by means of which the rake-head is secured to the axle, as will be hereafter more fully explained. Fig. 4 represents a top or plan view of a section of one of the wheels and one end of the axle. Fig. 5 represents an inside view of the principal parts shown in Fig. 4, the axle being shown in section on line C D, Fig. 4. Fig. 6 represents, upon an enlarged scale, a section of the parts shown in Fig. 2; and Fig. 7 represents a top or plan view of the parts shown in Fig. 3, but upon a reduced scale, Fig. 3 being a section on line E F, Fig. 7.

To enable those skilled in the art to which my invention belongs to make and use the same, I will proceed to describe it more in detail.

In the drawings the part marked A is the main axle, the front, under, and rear sides being scored or grooved out to receive the front curved ends of the rake-teeth B, which are arranged at the desired and proper distances apart. After the curved front ends of the rake-teeth B have been placed in their respective scores or grooves *a*, a supporting or guard plate, A′, is secured to the under side of axle A, which thus prevents the teeth from dropping out of their scores or grooves. The rear curved ends of the teeth B pass over cross-bars C D, which extend the whole length of the rake-head and in rear thereof, as indicated in the drawings. The cross-bar C is secured to the under sides of a series of arms, E, while the cross-bar D is suspended by rods *b* from the rear ends of the shafts F F, shafts F F being secured to axle A by upright pieces G. Arms E are cut out in circular form on the front under sides, to fit the upper side of axle A, which is turned in circular form at the proper places to receive said arms, and which arms are retained upon the axle A by means of semicircular straps *c*, which encircle the under side of the axle, the ends of said straps being bent out horizontally, and provided with holes to receive the bolts 1 1, by means of which said straps are secured to arms E, whereby arms E can be rocked back and forth without being detached from the axle to raise or lower the rake-teeth. A cross-bar, H, is secured to the front upper edges of all the arms E, and is provided with horizontal slots to receive the links 2. In securing the parts together, when rake-teeth B are placed in position their front vertical ends *d* are passed through their respective links 2, so that when the ends of their respective bow-springs 3 are passed through the links 2 upon the opposite side of cross-bar H, as indicated in Fig. 3, the upper front ends *d* of the rake-teeth are drawn by the force of springs 3 against the front side of the cross-bar H. I is a lever. The lower bent end 4 is fastened to the cross-bar H, and also to the cross-bar C, whereby the driver from his seat I′ can, with his right hand, grasp lever I, and by drawing it forward, as indicated in dotted lines, Fig. 2, turn the arm-pieces E and their strap-pieces *c* upon the axle A, thus elevating the rake-teeth B, as indicated in dotted lines, same figure. When the rake is in use, as shown in full lines, Fig. 2, teeth B are locked down by means of the hinged triangular lock-piece *e* and locking and unlocking lever J, which is pivoted to the front end of arm K, which, in turn, is fastened to the cross-bars H and C. The rear end J′ of lever J works in a slot in the lower end of a pendent piece, L, the upper end of which is rigidly secured to the rake-axle A, and it is also provided with a notch, 5, to catch against one corner of the triangular piece *e* when the rake-teeth are locked down, as indicated in full lines, Figs. 2 and 6 of the drawings.

When the driver wishes to unlock the rake-teeth, he places his foot upon the head 6 of lever J, and forces it down, thereby raising

the rear end of lever J sufficient to allow it to turn over the triangular piece *e*, and slide back over it as the teeth are raised. When the driver removes his foot the rake-teeth fall back, and lever J is drawn forward over the triangular piece *e*, which is caused to assume the proper position for catching into notch 5 as soon as that is drawn forward of one of its corners, as indicated in Fig. 6, thereby locking down the teeth again.

Upon the ends of the axle A are secured socket-pieces M, having circular cogged flanges 7 to receive the circular cogged flanges 8 on the inner faces of the crank-arms N, from which project the journals N′, upon which the wheels O turn. The cogged flanges 7 and 8 are retained in their locked position by means of a screw-bolt, 9, which is inserted in each end of the axle.

It will be seen that by this arrangement of connecting the journals upon which the wheels O turn with axle A, that the operator can quickly and easily adjust the teeth B at a greater or less distance from the ground, as occasion may require, while the rake-teeth elevating and locking mechanism remains the same and unchanged.

If any sudden strain comes upon one or more of the teeth, springs 3 yield, and allow the teeth to rise and pass the temporary obstruction, after which the springs react and cause the teeth to assume their former position.

When at rest the rake-teeth all have a bearing upon the horizontal rake-tooth supporting cross-bar D.

The driver's seat I′ is supported at each end by a spring, 10, which in turn is secured to the cross-piece P, supported upon the rear ends of shafts F, which are connected in front of the driver's seat by a cross-piece, Q, above which is arranged a guard-rail, R, while side boards R′ R′ are attached to the under sides of the cross-pieces Q and P just inside of the rear ends of the shafts F. Side boards R′ R′ not only strengthen the rake, but afford a convenient mode or means of enabling the driver to reach and leave his seat I′.

It will be understood that the parts of rakes not particularly described or shown may be made in any of the well-known modes.

S is the whiffletree, by means of which the rake is drawn. Hay-guards T project from the rear part of the axle and between the teeth, said guards being all united to rail D, and these hay-guards T prevent the hay from rising up between the teeth too high, and also hold the hay down when the teeth are raised to discharge the hay in the windrow.

When the teeth are locked down, as shown in full lines, Figs. 2 and 6, the rear end of lever J, in this instance, is kept in place upon one face of the triangular piece *e* by a bow-spring, 12, arranged upon a pin which passes through the slotted end of arm K, and back of the point where said arm is pivoted to lever J. One end of the bow-spring 12 presses against the rear end of the slot in arm K, while the other end of the spring presses against the rear edge of lever J, so that when the front end of lever J is depressed, and its rear end raised, the ends of the bow-spring are brought nearer together, but regain their former positions again as soon as the driver's foot is removed from the end 6. Any other suitable device may be employed, however, for this purpose.

In lieu of the cogs 7 and 8, the face of the part M may be provided with a series of holes to receive one or more projections upon the face of the piece N, whose crank, arm, or journal N′ may be cast hollow; and in lieu of a bolt, 9, a bolt may be employed having a head to hold piece M on, with an outwardly-projecting part beyond its head to pass through the center hole in the part M, which is to be retained in any desired adjusted position by means of a nut screwed upon said projecting bolt end.

When this last device is employed to adjust the rake-teeth at a greater or less distance from the ground, the operator has only to unscrew the nut which holds part N in place a sufficient distance to allow the projection upon its face to be withdrawn from one of the holes in the face of the part M, and slipped into another, when the nut can be screwed up and the parts firmly fixed in their newly adjusted positions.

Having described my improvements in horse hay-rakes, what I claim therein as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the notched locking-lever J, of the hinged triangular locking piece *e*, substantially as and for the purposes set forth.

2. The combination, with locking and unlocking lever J, of the foot piece 6, substantially as and for the purposes set forth.

3. The combination, with the grooved or scored axle A and arm E, of the straps *c*, slotted cross-piece H, springs 3, links 2, and rake-teeth B, arranged to operate in relation to each other, substantially as and for the purposes set forth.

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Witnesses:

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