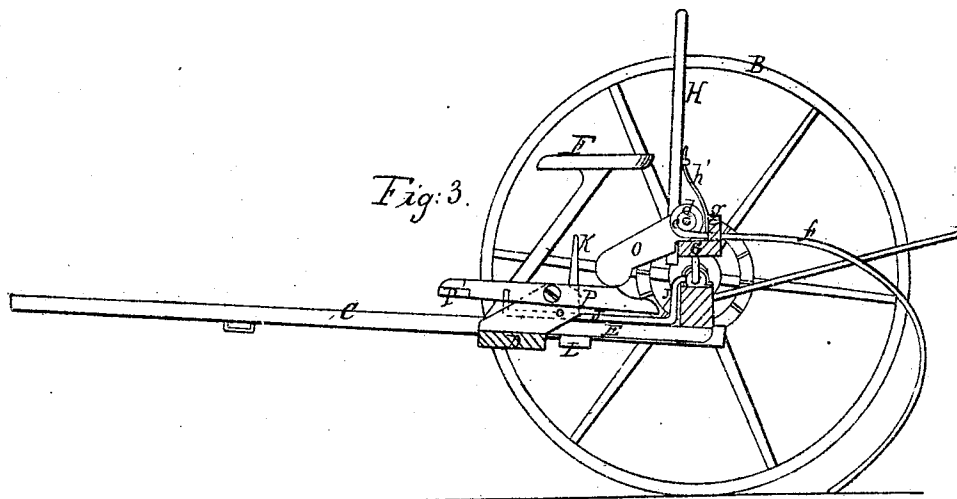
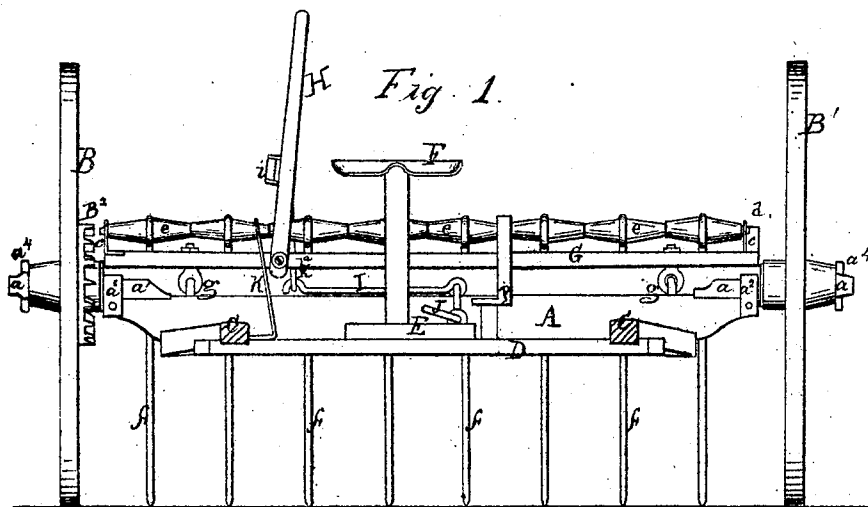


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Witnesses.
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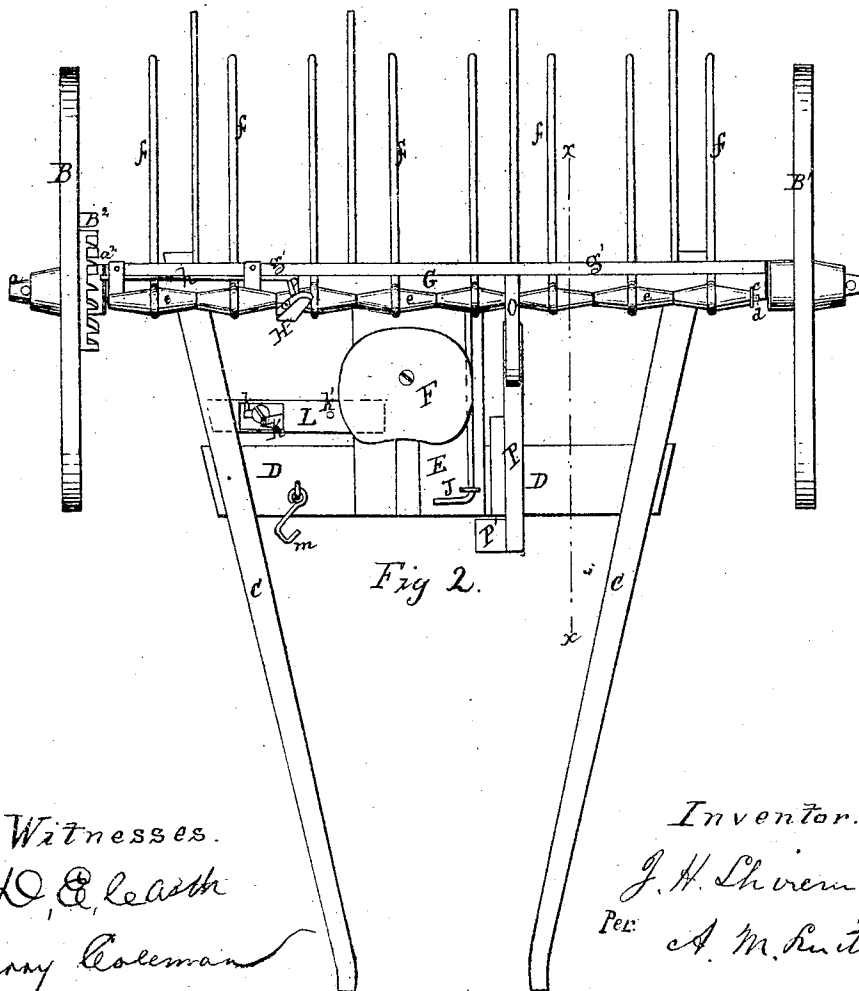
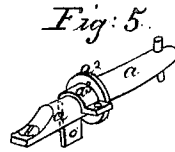
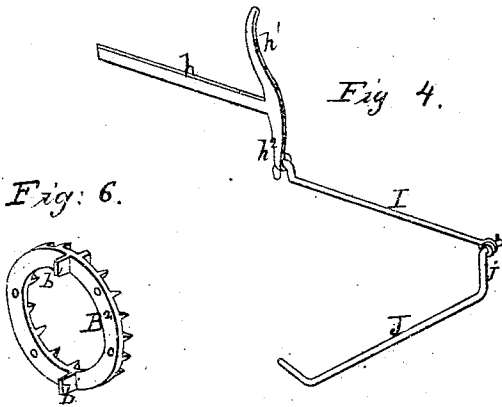
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UNITED STATES PATENT OFFICE.

J. H. SHIREMAN, OF YORK, PENNSYLVANIA.

IMPROVEMENT IN HORSE-RAKES.

Specification forming part of Letters Patent No. 87,977, dated March 16, 1869.

To all whom it may concern:

Be it known that I, J. H. SHIREMAN, of York, county of York, and State of Pennsylvania, have invented certain new and useful Improvements in Horse-Rakes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making a part of the specification, in which—

Figure 1 is a front elevation of my improved rake. Fig. 2 is a plan or top view of the same. Fig. 3 is a longitudinal section of the same, taken in the line *x x*, Fig. 2. Fig. 4 is a perspective view of the slide, connecting-rod, and actuating-treadle, hereinafter explained, said parts being shown detached from the rake. Fig. 5 is a perspective view of one of the metallic spindles detached; and Fig. 6 is a similar view of the driving spur-wheel.

Similar letters of reference denote corresponding parts wherever used.

My invention relates to the improvement of devices for applying the power which draws the rake forward to the actuating of the rake for discharging the gathered load, at the option of the attendant, and to the arrangement of means whereby the rake is placed more completely under the control of said attendant than has heretofore been done.

The nature of the improvements will, however, be best understood from the following detailed description of the construction and operation of the rake.

In the accompanying drawing, A represents the axle or bed-piece, provided at its opposite ends with metal spindles or axles *a*, upon which the carrying-wheels B B' are mounted. These metallic spindles or axles *a* of axle A are each made or cast in a single piece, in form substantially as shown in the detached view, Fig. 5, consisting of the journal *a*, shank *a'*, shoulder *a''*, and flanged collar or band *a'''*.

The journal is perforated to receive a pin or key, *a''*, which holds the hub of wheels B B' properly in place upon the axle or journal against the shoulder *a''*, and the flanged collar *a'''* serves to unite the metallic axles *a* to the bed A, which is recessed or grooved at its ends to receive the shank *a'*, said shank being let into the bed-piece A about one-third of its diameter, so as to bring the axial line or center

slightly above the surface of the bed-piece A, for a purpose hereinafter explained, and is secured by bolts in the end of shank *a'* and through the flanges of the collar or band *a'''*.

It will be seen in the drawing, Figs. 3 and 5, that when the metallic axles are properly secured in their sockets on the bed-piece the depth of the socket is such that one of the flanges is slightly removed from the bed-piece. By this arrangement the loosening of the said axles in the bed, consequent upon use, may be compensated for by simply tightening a single bolt.

Shafts C are connected at their rear ends to the under side of the axle A, and are united at a suitable distance in front of said axle by a transverse bar, D, said bar, in connection with axle A, forming a support for the platform E, upon which the driver's seat F is mounted in any usual or desired manner.

G is the rake-head, mounted directly over the axle A, and connected therewith by means of hinges *g*, arranged in line, or nearly in line, with the center of the metallic ends or axles *a*, in such manner as that the movement of the rake-head upon its hinges shall be upon a center coincident with the center of rotation of the actuating or driving wheel B, as hereinafter set forth.

The head G consists of an angular bar, upon the horizontal portion of which are secured perforated uprights *c c*, of any desired number, which afford bearings or supports for a rake-shaft or rod, *d*, upon which the ferrules or rake-tooth thimbles *e* are mounted, the teeth *f* being shrunk upon or united to said thimble in any usual manner.

A vertical portion, *g'*, of the rake-head G is slotted vertically at intervals corresponding to the distance apart of the rake-teeth *f*, and the teeth pass through said slots, and are allowed a limited vertical play therein, each independent of the others and of the rake-head.

Wheel B has secured to its inner side a spur or ratchet-ring or wheel, B², the outer side or edge of which is armed with spurs or lugs *b'*, (see Fig. 6,) which rest against the advancing face of the spokes of the wheel B, and serve to relieve the fastening screws or bolts which secure the ring to said wheel of the strain which would otherwise come upon them.

The inner edge of the ring is provided with a series of teeth, through which the power which draws the rake is applied to discharge the gathered load, in a manner that will now be explained.

h is a slide, mounted in bearings or boxes on the rake-head, and provided at its inner end with arms h^1 h^2 , the upper one of which, h^1 , is bent slightly forward, as shown in Figs. 2 and 3, and engages with or passes through a loop or eye attached to an upright hand-lever, H. Said lever is connected at its lower end to the rake-head by a horizontal pivot, upon which it is free to vibrate in such manner as to impart a lateral movement to the arm h^1 and slide h .

The form of the arm h^1 and the manner of its connection with the lever H are such as strengthen and brace said lever sufficiently to enable the attendant to operate the rake-teeth by hand, when desired, without interfering with the freedom of movement necessary to permit the direct reciprocation of the slide and the vibrating movement of the lever.

The bolt which secures the lever to the rake-head is provided with a gum washer, or an equivalent device, which will prevent the jolting of the rake from accidentally moving the lever and slide from the position in which they may be set by the attendant.

The arm h^2 of the slide h extends downward to a point intermediate between the rake-head and axle, and about in line with the hinge, and is connected by a horizontal rod or link, I, arranged between the head and axle, to an arm, j , of a treadle-lever, J, which is mounted in bearings on the platform E and extends forward to a convenient point to be operated by the foot of the driver sitting in the seat F.

The location of the connecting rod or link I in the described relation to the rocking head and axle permits the springing or bending of either of said parts without obstructing the operation of said link when it is desired to throw the rake into or out of gear.

It will be seen from the foregoing that the slide h is adapted to be operated by the foot also as well as by the hand of the attendant. The driver therefore, when he wishes to discharge the load gathered by the rake-teeth, either presses down the treadle J or forces the lever H outward with his hand, carrying the slide h outward by either operation until its outer end engages with the spur-wheel B², at which instant the rake-head hinged to the axle, as described, is caused to roll upon a center coincident with the axis of said wheel, thereby lifting the teeth until they are freed from and pass over their gathered load.

K is an inclined standard, by means of which the lever and slide are retracted for releasing the rake-head and permitting the teeth to return to their former position.

The foot of said standard K is slotted, as shown at k , to permit its horizontal adjustment by means of a set screw or screws, and

is attached to a reversible transverse bar, L, by the adjustment of which the height of the standard may be varied, if desired, for changing the point at which the shipping-lever H is operated to release the rake-head.

The height of bar L is adjusted by turning it over and end for end, and securing it upon the top of shaft C and platform E instead of underneath, and when thus reversed the bolt which secures the standard thereto will pass through the perforation k' . Instead of thus reversing the bar L, a block or washer may be placed under the foot of the standard for raising the same, if desired.

The lever H is provided with a friction-roller, i , which acts against the inclined standard and serves to diminish friction. For transportation upon the road or from field to field, the lever H is thrown forward or depressed, thereby effectually holding the slide h out of gear, and is held down by a hook or link, m , attached to transverse bar D.

O is a short arm rigidly attached to the rake-head and rounded at its forward end, substantially as shown in Fig. 3. P is a pressure-treadle, pivoted at p in an upright, Q, on bar D.

The forward end of treadle P has a foot-piece, P', attached to it, arranged in advance of the foot-piece on shipping-treadle J, as shown in Figs. 2 and 3, and the rear end of said treadle is tapered or cut in an ogee form, substantially as represented in Fig. 3. By this construction of arm O and pressure-treadle P the rake head and teeth are placed more completely under the control of the attendant than they have been heretofore, as follows, viz: When the rake-teeth are depressed for gathering the hay or grain, the forward curved end of arm O rests upon the upper horizontal face of lever P, and the driver, by pressing his foot on the forward end or foot-piece P, is enabled to force the forward end of arm O upward, and thereby to correspondingly depress the rake-teeth, and to hold them down upon the surface of the ground with any desired force. This is frequently indispensable to the successful operation of the rake, owing to the fact that the action of the accumulating load upon the teeth is such as to tend to lift them in such manner as would permit the escape of the hay or grain. Again, when the teeth are lifted to discharge their load, the arm O drops behind the lever P, and the driver, by depressing the forward end thereof, prevents the return of said arm, thereby holding the teeth in their elevated position as long as may be required for the perfect discharge of the gathered load or for temporary transportation without the necessity of using the hook m above referred to; or the rake-teeth may be held at any desired intermediate point or degree of elevation by engaging the curved rear end of the lever with the forward end of arm O, and, by means of a regulated pressure of the foot on treadle P, the rake-teeth, instead

of being allowed to drop, may be lowered gently to the ground after having been elevated to discharge their load.

The arrangement of the pressure-treadle relative to the shipping-treadle is such as that, after a load has been gathered, the attendant has only to withdraw his foot or move it slightly backward from the foot-piece P' , where it is placed to hold the teeth down to their work, when it is just in the right position to operate the treadle J for discharging the load in a manner that has already been explained, both treadles being arranged upon the same side of the seat, and one forward of the other, in the manner shown and described.

The hand-lever, it will be seen, is arranged upon the opposite side of the driver's seat, and is in convenient position to be operated by the hand of the attendant if it is preferred thus to operate it or the character of the work should be such as to render it necessary.

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

1. The foot-treadle having its rear end in an ogee form, in combination with the rounded arm on the rocking rake-head, all arranged and operating substantially as set forth, whereby the attendant is enabled, by the operation of one lever, to hold the teeth down to their work, to hold them up, or to lower them easily and slowly to the ground after they have been elevated.

2. The arrangement of the foot-pressure lever and the treadle, for throwing the rake into gear upon one side of the driver's seat, and the hand-lever, for operating the rake upon the other side of said seat, as described.

3. The arrangement of the foot-piece on the pressure-treadle P forward of and in the described relation to the shifting-treadle, for the purpose set forth.

4. The arrangement of the connecting rod or link which connects the treadle-lever with the slide h between the rocking head and axle, and in line, or nearly in line, with the hinge of said head, substantially as described.

5. The pivoted lever H and reciprocating bar h , arranged upon opposite sides of the rotating rake-head, and connected together by the bent arm h^1 , substantially as and for the purpose set forth.

6. The metallic spindles or axles of the carrying-wheels, arranged above the center of the main axle or axle-bed, in combination with a rocking head hinged to said main axle in line, or nearly in line, with the center of rotation of said carrying-wheels, substantially as described.

7. The bar h , provided with the upright arm h^1 and pendent arm h^2 , substantially as described.

8. The elastic or spring washer, or its equivalent, in combination with the shipping-lever, for the purpose set forth.

9. The metallic axles or spindles a , provided with the shank a^1 , shoulder a^2 , and flanged collar or band a^3 , all cast in one piece, and combined with the main axle or bed-piece A , substantially as described.

10. The combination of the hand-lever H , the friction-roller i , and inclined standard K , all arranged and operating substantially as set forth.

11. Adjusting the height of the shifting-post or standard K , for regulating the degree of elevation of the rake-teeth, substantially as shown and described.

J. H. SHIREMAN.

Witnesses:

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A. W. SHETTER.