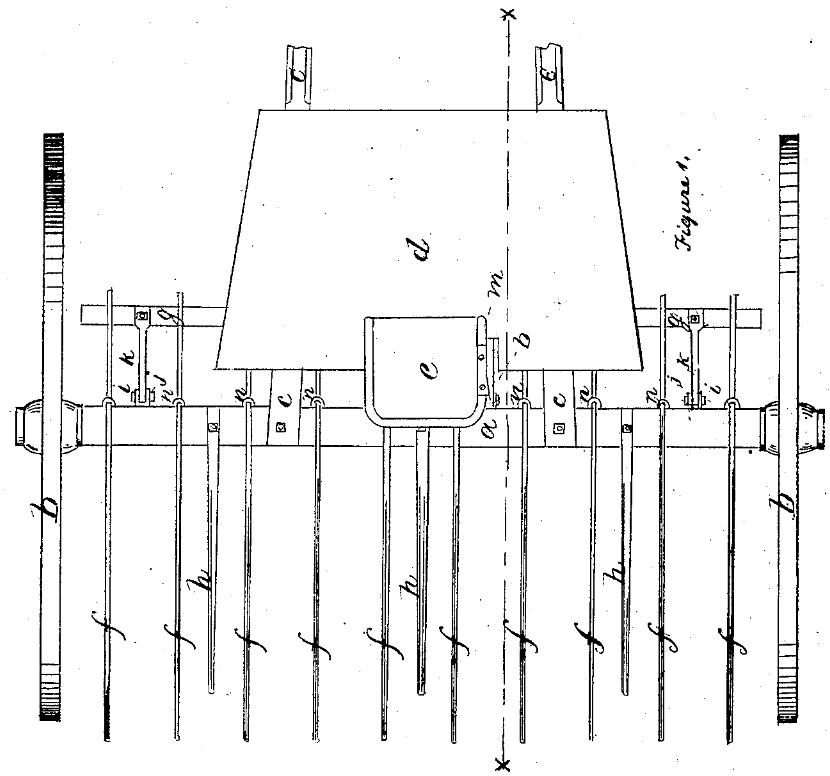
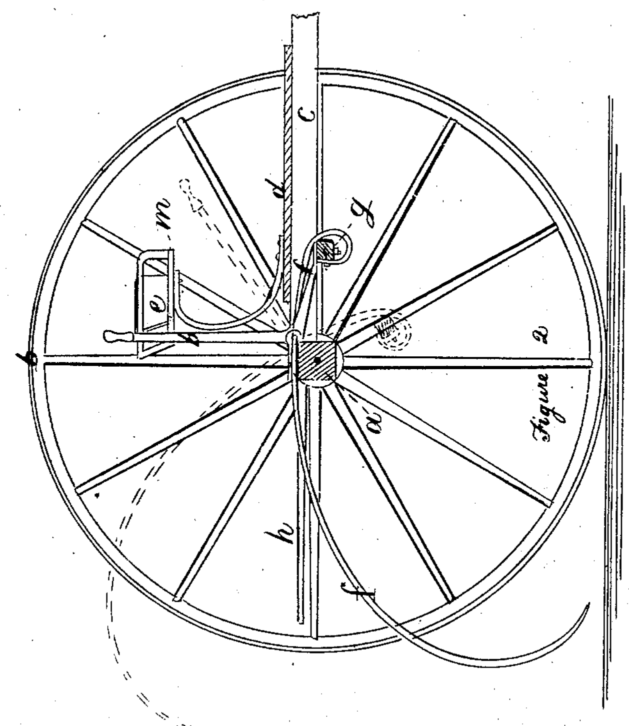
Robbins & Old,

Horse Rake.

No. 45346 Patented. Dec. 6. 1864





Witnesses:

E P Storr

John M. Neale

Ira Robbins
James Old
} by their attorney
W. Bakewell

UNITED STATES PATENT OFFICE.

IRA ROBBINS AND JAMES OLD, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN HORSE-RAKES.

Specification forming part of Letters Patent No. **45,346**, dated December 6, 1864.

To all whom it may concern:

Be it known that we, IRA ROBBINS and JAMES OLD, both of the city of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Hay-Rakes; and we hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan or top view of our improved rake. Fig. 2 is a longitudinal section through *x x*, Fig. 1.

In both of the figures like letters of reference denote similar parts.

Our improvement in hay-rakes relates principally to the peculiar conformation of the front end of the metallic teeth, the mode of attaching them to the frame, the position of the bar to which these teeth are attached relatively to the axle of the carriage, and the mode of attaching the tooth-bar to the axle, whereby we dispense with the use of separate springs to the teeth and of a separate cross-bar to support the teeth, thus simplifying the construction and decreasing the weight of the machine, and enabling the springs not only to rise vertically when they meet with any obstruction, but also to yield slightly backward, thus lessening the strain on the machine and diminishing the liability of the teeth to bend and break.

To enable others skilled in the art to construct and use our improved machines, we will proceed to describe their construction and operation.

In the drawings, *a* is the axle of the carriage, at each extremity of which is a wheel, *b*. To the axle are attached two shafts, *c c*, in the usual manner, and across the shafts, near to the axle *a*, is a small platform, *d*, for the driver, above and in the rear of which is the driver's seat *e*, so placed as to throw the weight of the driver slightly in front of the axle.

f f, &c., are the teeth of the rake, curved, of the usual shape at their rear end, and made of steel. The front end of each tooth *f* is bolted or otherwise securely attached to a cross-bar, *g*, which is placed in front of the axle of the machine. The front end of the teeth is curved round the bar *g*, as seen in Fig. 2, each tooth passing over the top of the bar without touching its upper surface, and is bent round with a curve of short radius, so as to pass in front of and under the cross-bar, and is attached to the rear side of the bar. This construction of the front end of the teeth gives them sufficient spring in themselves, and entirely dispenses with the necessity of using a separate spring pressing on the upper side of the teeth, as is usual in the construction of hay-rakes using curved metallic teeth. The tooth-bar *g* is placed in front of the axle *a*, as before stated, but so much lower than it as to permit the teeth to rest upon the upper surface of the axle when in the proper position for use. The teeth extend back of the axle for some distance and curve downward toward the ground. The axle of the carriage thus serves the purpose of a rest for the teeth, and keeps them all in a uniform position and at an equal height from the ground, and by thus placing the cross-bar *g*, to which the teeth are attached in front of the axle, so that the teeth may rest upon it, we dispense with the use of a separate rest, which in hay-rakes as heretofore constructed is attached to the clearing-bars *h h*. The tooth-bar *g* is attached to the front side of the axle by iron arms *k k*, which are inserted at *i i* into hinge-pieees *j*, attached to the axle. At one side of the driver's seat is a bent lever, *l*, the long arm of which extends up to the seat, and the short arm *l'* is attached to the tooth-bar *g*, in like manner as the arms *k k*, the fulcrum *i* of the lever being close to the axle *a*, being pivoted to a hinge-piece, *j*, inserted in the axle *a*. The lever *l* thus performs the part of an arm to support the tooth-bar *g* and attach it to the axle, and also enables the driver to lower the tooth-bar *g* and raise the rear end of the teeth off the ground, as shown by dotted lines in Fig. 2.

When it is desired to lower the teeth for use the lever-arm *l* is drawn back and held in position by a projecting plate, *m*, on the arm of the driver's seat, which forms a notch for it to enter. The teeth projecting in the rear of the axle *a* so nearly balance that portion of the teeth which is in front of the axle and the tooth-bar *g*, to which they are attached, that there is very little strain on the lever-arm *l* when the teeth are lowered, the weight of the teeth and tooth-bar being sustained by the axle *a*. A staple, *n*, is passed around each

tooth and inserted into the forward edge of the axle. The staples, not being driven down close to the teeth, allow of sufficient play to the teeth, and yet prevent their being raised too high or working sidewise.

The advantages of our improvement are that the teeth have a spring in themselves, and are not dependent on detached springs, which are liable to get out of order, and that, from the peculiar shape of the spring and the manner in which it is attached, each tooth is susceptible of a horizontal motion either forward or backward in addition to the spring of the rear end of the tooth, and of the vertical motion which is common in such machines; also, that by placing the bar to which the teeth are attached in front of the axle the weight of the teeth is nearly evenly balanced on either side of the axle, which makes the machine much stronger and more simple. The employment of staples attached to the axle, through which the teeth pass, is also an advantage, as it gives firmness and steadiness to the teeth without interfering with the horizontal and vertical spring necessary to enable them to yield to obstructions which they may meet with in use.

Having thus described our improvement in hay-rakes, what we claim as our invention, and desire to secure by Letters Patent, is—

1. Placing the bar to which the teeth are attached in front of the axle of the machine, and hinging it thereto, so that the weight of the tooth-bar and teeth shall bear directly upon the axle and be nearly balanced thereon.

2. In combination with the tooth-bar *g*, placed in front of the axle, as described, the arms *k k* and short arm *l'* of the lever *l*, attached at one end to the tooth-bar in front of and hinged to the axle, so that on depressing the tooth-bar by a forward motion of the lever *l* the points of the teeth are raised from the ground while the teeth still rest upon the axle, which serves as their fulcrum or turning-point, thus dispensing with the use of a separate cross-piece to sustain them in an elevated position, substantially as described.

In testimony whereof we, the said IRA ROBBINS and JAMES OLD, have hereunto set our hands.

IRA ROBBINS.
JAMES OLD.

Witnesses:
A. S. NICHOLSON,
JOHN M. NEAL.