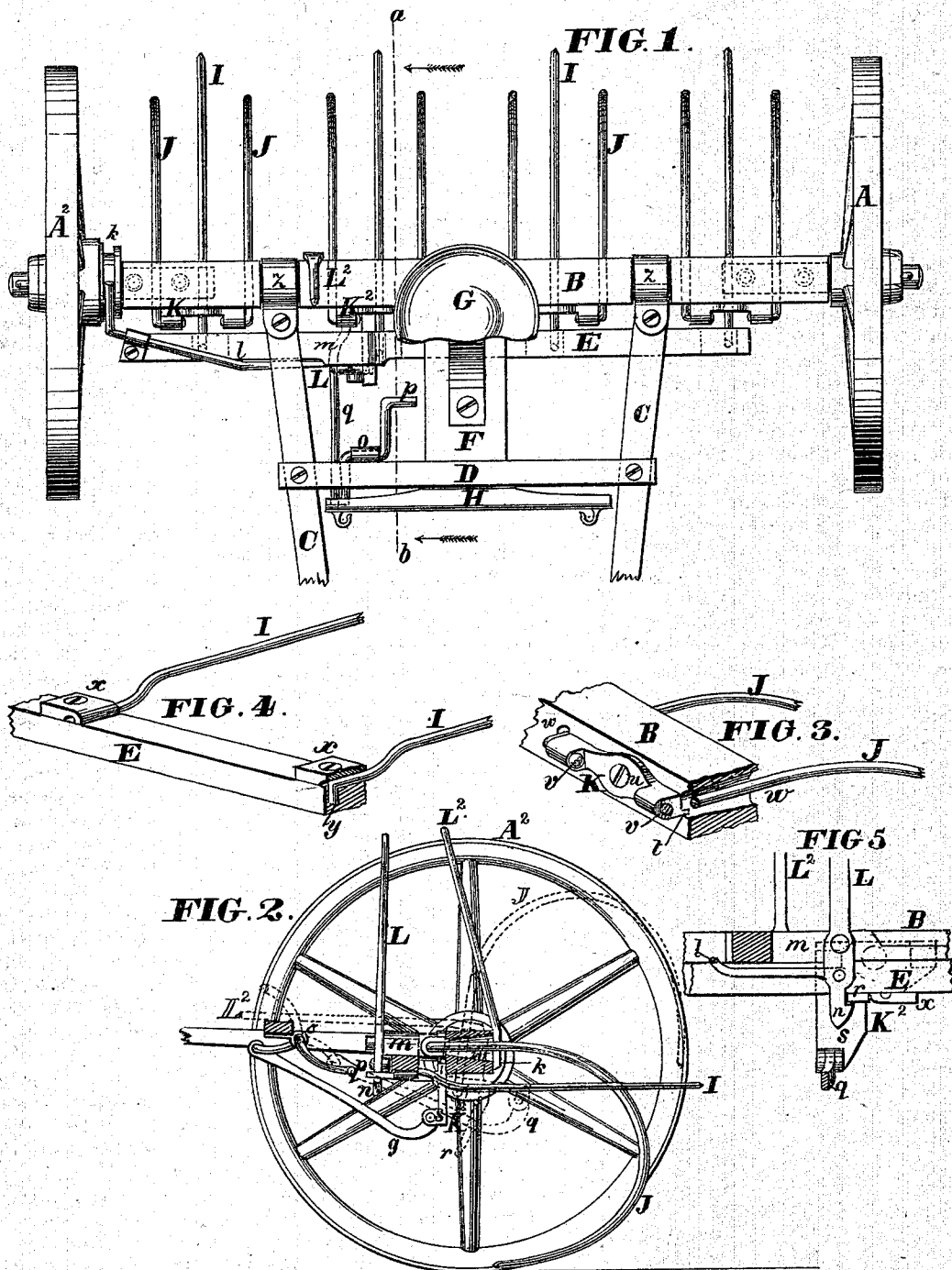


C. O. LUCE.  
Horse Hay-Rakes.

No. 146,348.

Patented Jan. 13, 1874.



WITNESSES:

*Geo L. Cwin*  
*Walter Allen*

INVENTOR:

*Curtis Orange Luce*  
By *Knights* Attorneys.

# UNITED STATES PATENT OFFICE.

CURTIS ORANGE LUCE, OF BRANDON, VERMONT.

## IMPROVEMENT IN HORSE HAY-RAKES.

Specification forming part of Letters Patent No. **146,348**, dated January 13, 1874; application filed November 8, 1873.

### *To all whom it may concern:*

Be it known that I, CURTIS ORANGE LUCE, of Brandon, in the county of Rutland, Vermont, have invented an Improved Horse-Rake, of which the following is a specification:

This invention relates to those sulky horse-rakes, in which the axle-tree constitutes the rake-head, and extensions of the thills support to the driver's seat, and to those in which independently-pivoted spring rake-teeth are employed, and to those in which the rake-teeth are elevated by means of a clutch, which serves to attach the axle-tree temporarily to one of the ground-wheels for this purpose. The present invention consists, first, in a peculiar combination of devices for holding the rake-teeth to their work, and for releasing the axle-tree, and for attaching it to one of the ground-wheels by friction for elevating the teeth. The invention consists, secondly, in the combination of a slotted axle-tree, and a bracket of peculiar construction applied to the front of the axle-tree, for the purpose, primarily, of pivoting and supporting two loose spring rake-teeth, the said bracket serving also as a means for locking the teeth in raking position, and for connecting to the axle-tree a treadle for sustaining the rake-teeth in elevated position.

Figure 1 is a plan view of a horse-rake illustrating this invention. Fig. 2 is a vertical longitudinal section of the same on the line *a b*, Fig. 1. Fig. 3 and Fig. 4 are fragmentary perspective views illustrating the manner of attaching the rake-teeth and clearing-fingers. Fig. 5 is a fragmentary front view illustrating the means for locking the rake-teeth in working position, and for sustaining them in elevated position.

In this improved horse-rake a pair of light ground-wheels, *A A*<sup>2</sup>, support a combined axle-tree and rake-head, *B*. A pair of thills, *C*, are framed together by cross-bars *D E*, and hinged to the axle-tree by straps *z*, embracing turned wrists on the latter. A narrow central platform, *F*, is supported on the cross-bars of the thills, and on this a driver's seat, *G*, is mounted. A single-tree, *H*, is attached to the front cross-bar *D* of the thills. The rear cross-bar *E* supports clearing-fingers *I*, which are attached to its under side by upturned front ends *y*, and metallic clips *x*, as illustrated in Fig. 4, which

represents a portion of this head-bar with its appurtenances in inverted position. Curved spring-teeth *J* are attached to the axle-tree *B* in pairs by pivot-brackets *K K*<sup>2</sup> applied to the front side of the axle-tree, and projecting through slots *w* formed in the latter, as illustrated in Fig. 2, by which the teeth are supported laterally, while they are permitted to rise and fall independently, so as to ride over obstructions, or to accommodate themselves to uneven ground. A great advantage of this device over others for the same general purpose, is that it is nearly or quite noiseless. The upper ends of the teeth are bent laterally at right angles to form the pivots *v*, which, in each pair of teeth, project toward each other. Each of the ordinary pivot-brackets *K*, Fig. 3, is attached by a single central screw, *u*, and is prevented from turning on this by a rib, *t*, Fig. 3, entering a groove in the axle-tree. The pivot-bracket *K*<sup>2</sup>, immediately to the right of the driver's seat, is constructed with a downward extension, *s*, constituting a lever-arm, and with a horizontal arm or projection, *r*, which constitutes a latch, as illustrated most clearly in Fig. 5. The lever-arm *s* is connected by a rod, *q*, to a treadle-lever, *p*. This treadle-lever is fulcrumed in a bracket, *o*, attached to the under side of the front cross-bar *D* of the thill-frame, and by means of the same the rake-teeth may be sustained in elevated position, as while driving to and from the field. The teeth are locked in working position by a hook or catch, *n*, on the extended lower end of a hand-lever, *L*, fulcrumed on a block, *m*, applied to the rear cross-bar *E* of the thill-frame and moving transversely. This catch *n* engages with the latch *r* projecting from the axle-tree, as illustrated in Fig. 5. At another point below the fulcrum, the lever *L* is connected by a bent rod, *l*, to the slide *k* of a friction-clutch formed within the hub of the right ground-wheel *A*<sup>2</sup>. The slide *k* is attached to the axle-tree by fitting on a square portion of the axle, so as not to rotate independently, and it is attached temporarily to the wheel, when pressed outward, by the friction between its face and periphery, either or both, and the walls of the socket in the hub. The friction-clutch operates only while the slide is thus pressed outward by means of the lever *L*, and

it yields if the teeth are carried too far. When the clutch-slide is retracted, the teeth drop to working position, and are secured by the catch *n*, as shown in full lines in Fig. 2. The elevation of the rake-teeth and the incidental movement of the other parts is illustrated by dotted outlines in Fig. 2. A supplemental hand-lever, *L*<sup>2</sup>, applied rigidly to the axle-tree affords means for lowering the rake-teeth by hand, or for elevating them by hand, as for passing an obstruction without dumping, or when the rake is not in motion.

It will be understood that many of the details of construction above specified are not essential, and many of the features of construction are not claimed as new.

The following is claimed as new, namely:

1. The combination of the friction-clutch slide *k*, connecting-rod *l*, hand-lever *L* with hook extension *n*, and the latch *r*, arranged and operating as described, for the purposes specified.

2. The combination of the axle-tree *B*, having the slots *w* formed therein, and the pivot-bracket *K*<sup>2</sup> applied to the front of the axle-tree and forming a hinge for two teeth, in the manner specified.

CURTIS ORANGE LUCE.

Witnesses:

GEO. BRIGGS,  
J. H. BLAKE.