C. EDGAR.

Horse-Rakes.

No. 145,852. Patented Dec. 23, 1873.

FIG. 1.

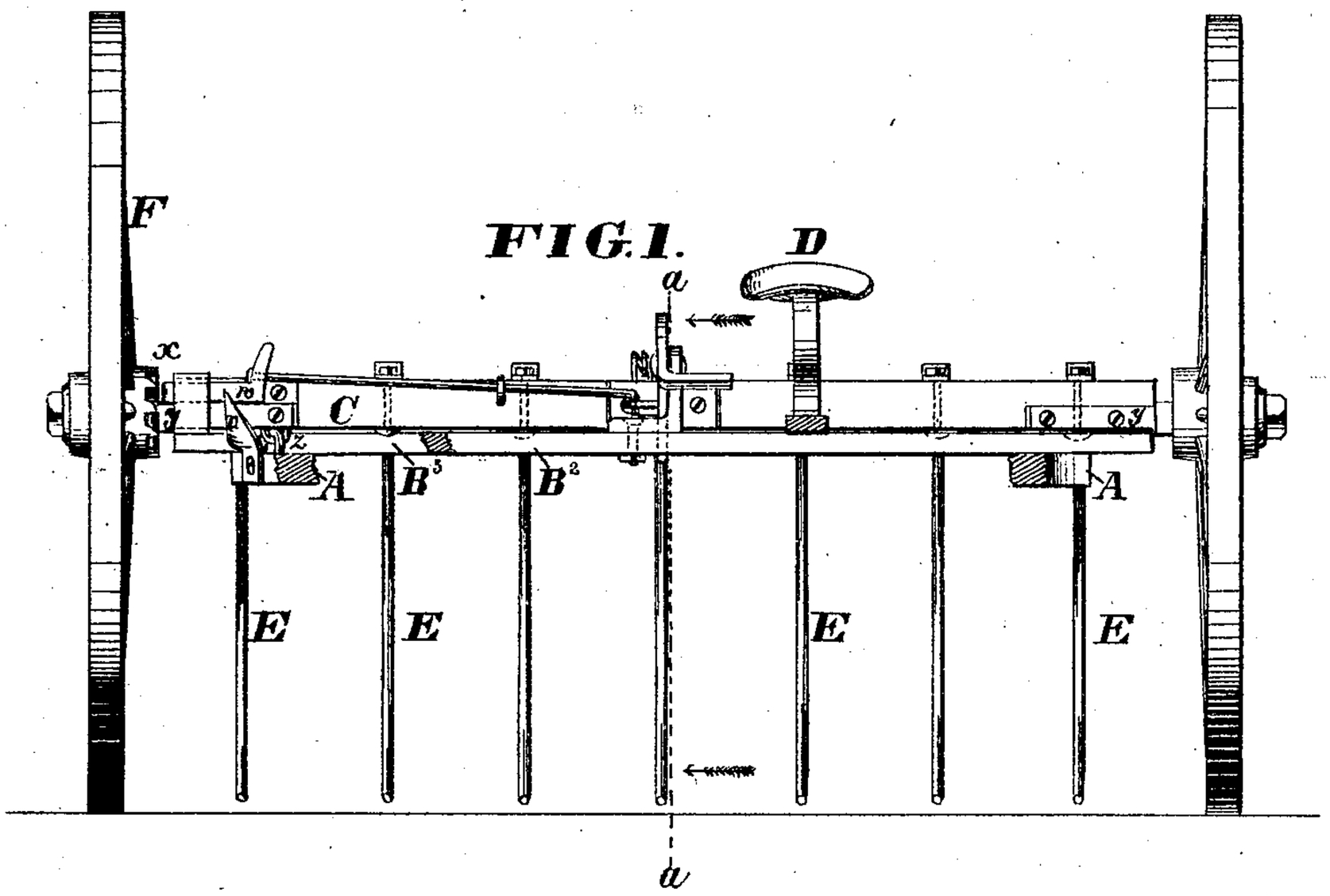


FIG. 2.

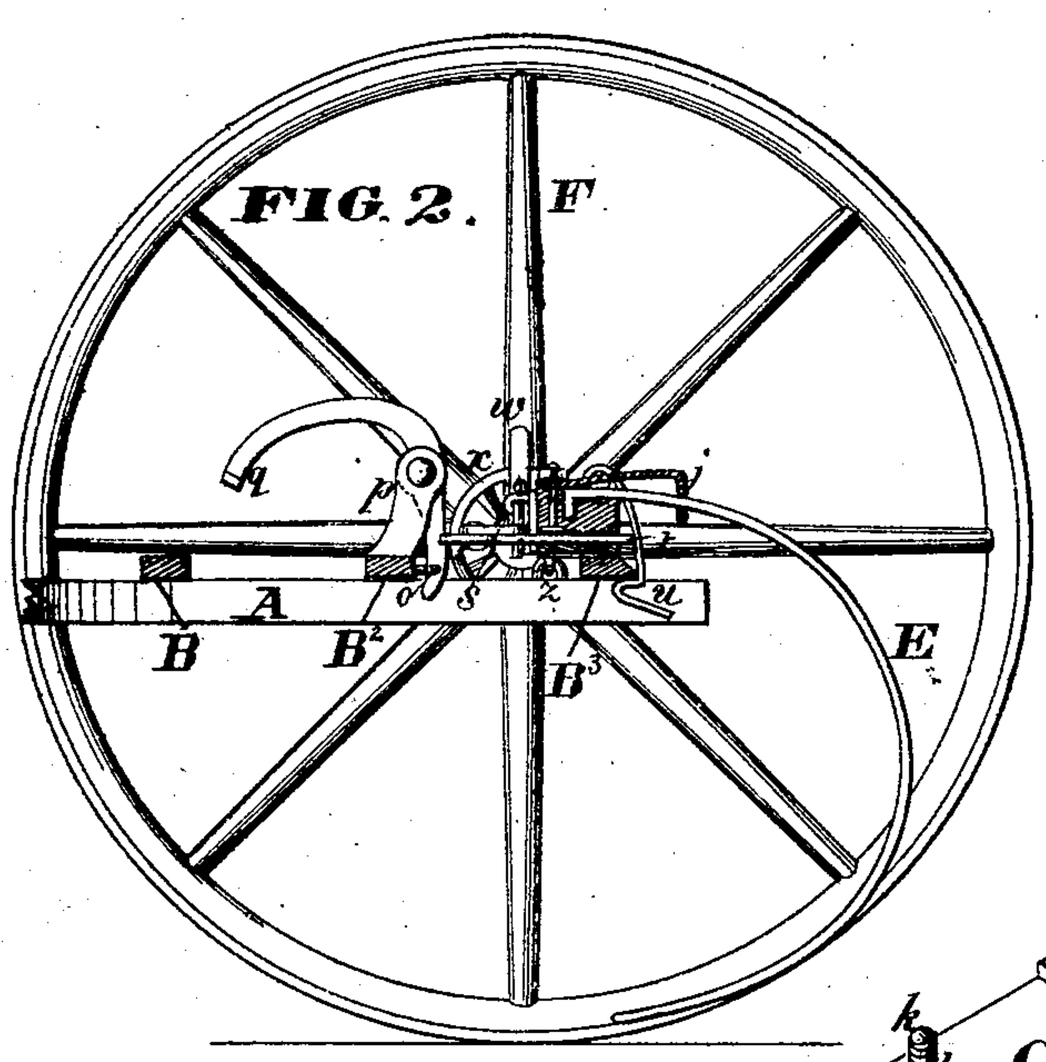


FIG. 3.

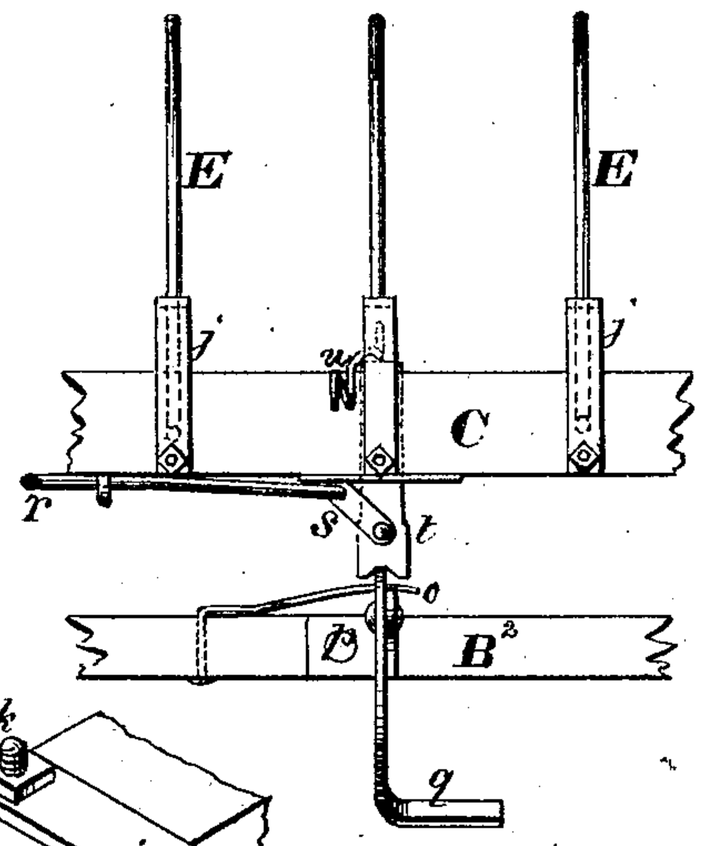
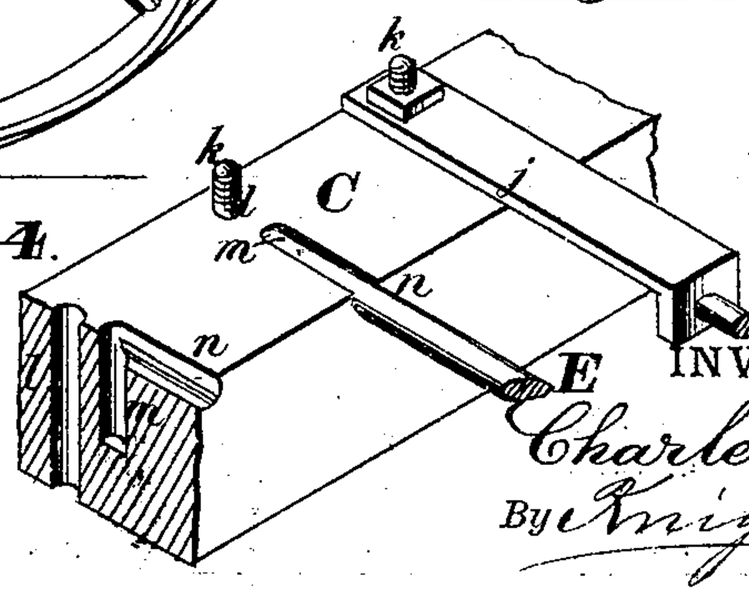


FIG. 4.



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AM. PHOTO-LITHOGRAPHIC Co. N.Y. (OSBORNE'S PROCESS.)

UNITED STATES PATENT OFFICE.

CHARLES EDGAR, OF DAYTON, OHIO.

IMPROVEMENT IN HORSE-RAKES.

Specification forming part of Letters Patent No. **145,852**, dated December 23, 1873; application filed November 3, 1873.

To all whom it may concern:

Be it known that I, CHARLES EDGAR, of Dayton, in the county of Montgomery, Ohio, have invented an Improved Horse-Rake, of which the following is a specification:

This is a sulky implement of that form in which the seat-frame is formed on rearward extensions of the shafts, and the axle-tree constitutes the rake-head. The spring-teeth are attached and re-enforced by elastic plates. The rear ends of the shafts are extended and furnished with a cross-bar beneath the axle-tree, and the latter is furnished with a spring-catch, which engages automatically with the said cross-bar to hold the teeth to their work. The hub of one ground-wheel is provided with a clutch-disk, and a sliding bolt on the axle-tree engages therewith. Another slide, working transversely through the axle-tree, is connected to the clutch-bolt by a thrust-link and connecting rod or wire, and is driven backward to release the axle-tree, and to attach it at the same time to the lifting ground-wheel, by a curved treadle-lever having a retracting-spring applied thereto. The clutch-bolt has an arm, by which it engages a fixed retracting-cam on the seat-frame when the teeth have been sufficiently elevated.

The invention consists, first, in the said combination of parts for locking and releasing the axle-tree or head; second, in the combination therewith of the said devices for attaching the axle-tree to the lifting ground-wheel and for returning the teeth to their work; third, in the said means for attaching and re-enforcing the rake-teeth, all as hereinafter specified.

Figure 1 is a front view of a horse-rake illustrating this invention. Fig. 2 is a vertical longitudinal section of the same on the line *a a*, Fig. 1. Fig. 3 is a partial plan view. Fig. 4 is a sectional perspective view, on a large scale, of a portion of the rake-head.

The seat-frame of this rake is formed by a pair of rearwardly-extended shafts, A, united at their rear ends by cross-bars B B^2 B^3. This is attached by hinge-joints *z* to the axle-tree C, and extended beneath the same, and the driver's seat D is mounted thereon in front of the axle-tree. The hinge-joints *z* and axle-spindles *y* are arranged at the lower front corner of the axle-tree, and the rake-teeth E project from the upper rear corner of the same. For lifting the rake-teeth, the hub of one of the ground-wheels F is provided with a crown clutch-disk, *x*, constructed with extended interdental spaces to facilitate its operation. A short L-shaped bolt, *w*, slides in suitable guides at the contiguous end of the axle-tree, so as to engage with the clutch-disk, and a fixed cam, *v*, is arranged on the seat-frame to automatically retract this clutch-bolt when the axle-tree has turned the requisite extent to clear the teeth from the load. Owing to the arrangement of the axle-spindles *y* and seat-frame connections *z*, the rake-teeth return to their work by the gravity of themselves and their head, the axle-tree. For holding the teeth to their work, a spring-catch, *u*, is attached to the back of the axle-tree, and engages with the rear cross-bar B^3 of the seat-frame. For lifting this catch and simultaneously projecting the clutch-bolt *w*, a slide, *t*, is arranged transversely of the axle-tree, so as to engage directly with the catch, and is connected by a thrust-link, *s*, and a rod or wire, *r*, to the clutch-bolt. A properly-bent treadle-lever, *q*, is pivoted on a bracket, *p*, on the second cross-bar B^2 of the seat-frame, so as to engage with the front end of the slide *t* to project the same, and a spring, *o*, is applied to this treadle to retract its effective end. For attaching and re-enforcing the spring rake-teeth E, horizontal grooves *n*, Fig. 4, are formed in the top of the axle-tree to receive the same, and vertical sockets *m l* are provided to receive, respectively, bends on the teeth E and bolts *k*. The latter are applied to elastic steel plates *j*, which cover the sockets in the top of the axle-tree, and project some distance behind the same, where they terminate in down-turned-perforated ends, through which the teeth pass. In the illustration, these spring-plates are each attached by a single bolt. In practice, two or more bolts may be applied to each plate.

Other details of mechanical construction in the respective devices admit of modification.

The operation of the rake is as follows: The rake being at work and the driver occupying the seat D, the rake-teeth are held to their work by the catch *u* locking the axle-tree C from turning. When the teeth are full, the driver puts his foot on the front end of the treadle *q* and

depresses the same. This action lifts the catch *u* by means of the slide *t*, and thus releases the axle-tree. Simultaneously, by means of the slide *t*, with the link *s* and rod or wire *r*, the clutch-bolt *w* is projected so as to engage with one of the teeth of the clutch-disk *x*. The axle-tree is thus attached to the ground-wheel F, and it rotates therewith until the rake-teeth are lifted sufficiently to discharge the load. The arm of the clutch-bolt *w* then comes in contact with the cam *v*, which retracts the bolt, and thus detaches the axle-tree from the ground-wheel. The rake-teeth then return to their work by gravity, and are secured automatically by the catch *u* engaging again with the cross-bar B^3. The rake-teeth are supported positively at a proper working height by the extended seat-frame. They ride over slight obstructions by virtue of their elasticity and that of their attaching-plates *j*. If a greater movement is necessary to pass an obstruction, the elastic retaining-catch *u* will yield and release the axle-tree.

The employment of a catch, broadly considered, for holding the rake-teeth to their work, is known to be old. The rearward extension of the shafts, the clutch, broadly considered, and the fixed releasing-cam, are also disclaimed for the same reason. The general idea of simultaneously releasing the axle-tree from the retaining-catch and attaching it to the elevating-wheel, broadly considered, is also known to be older than the present invention.

The following is claimed as new:

1. The combination of the retaining-catch *u*, arranged as described, the slide *t*, and the treadle-lever *q*, for projecting the latter to release the axle-tree.

2. The treadle-lever *q*, slide *t*, link *s*, and connecting rod or wire *r*, in combination with the retaining-catch *u* and clutch-bolt *w* for simultaneously operating the same, the clutch-bolt being constructed of L shape to engage with a fixed retracting-cam, *v*.

3. The combination of the elastic plates *j* and bolts *k* with the rake-teeth E and the axle-tree C, provided with grooves *n* and vertical sockets *m l*.

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