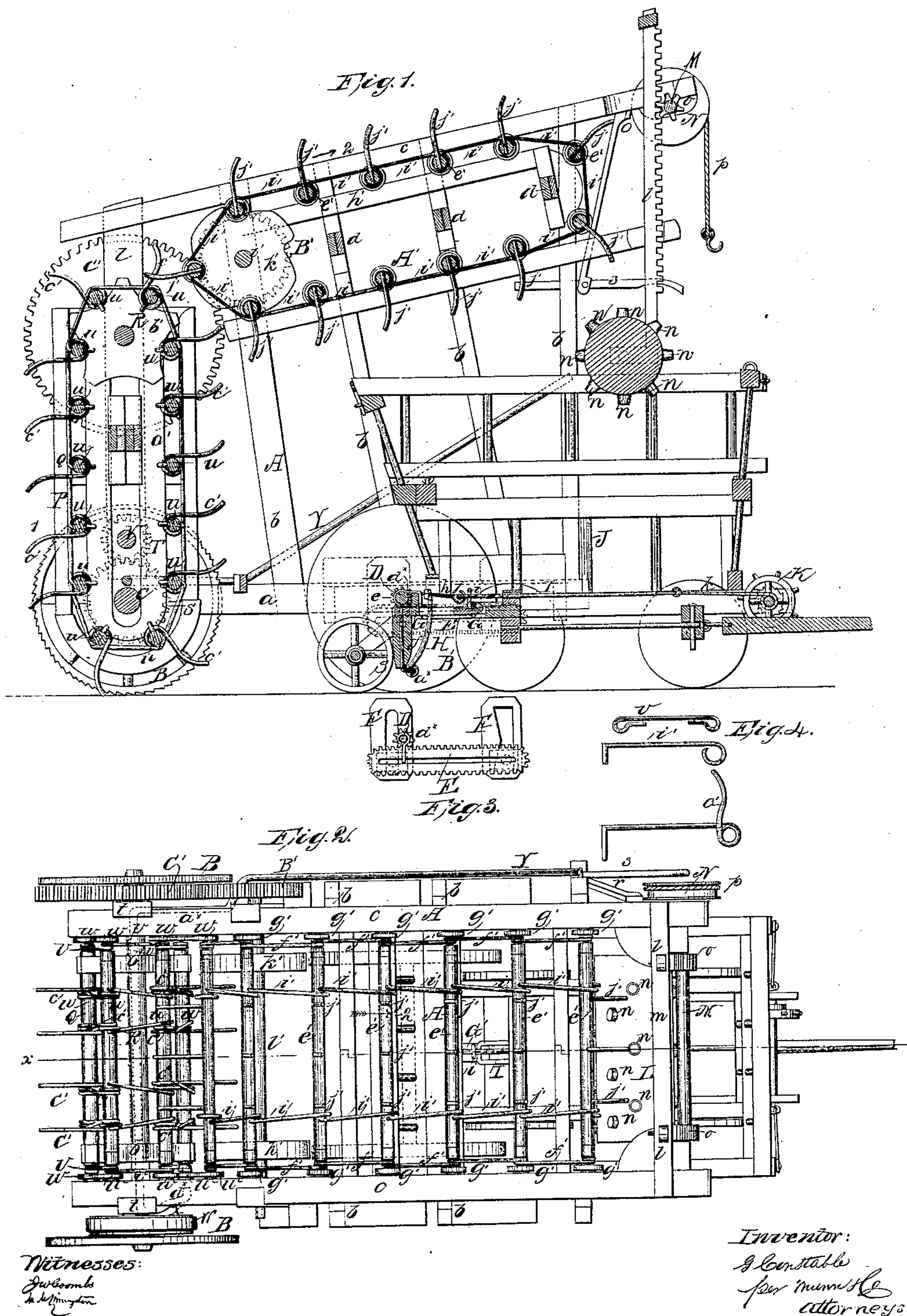


G. CONSTABLE.  
MACHINE FOR LOADING HAY.

No. 39,215.

Patented July 14, 1863.





# UNITED STATES PATENT OFFICE.

GORDEN CONSTABLE, OF CANNONSVILLE, NEW YORK.

## IMPROVEMENT IN MACHINES FOR LOADING HAY.

Specification forming part of Letters Patent No. 39,215, dated July 14, 1863.

*To all whom it may concern:*

Be it known that I, G. CONSTABLE, of Cannonville, in the county of Delaware and State of New York, have invented a new and Improved Hay Raking and Loading Device; 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, making a part of this specification, in which—

Figure 1 is a side sectional view of my invention, taken in the line *xx*, Fig. 2; Fig. 2, a plan or top view of the same; Fig. 3, a detached view of a part pertaining to the same; Fig. 4, detached views of parts pertaining to the endless rakes.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obtain a machine by which hay may be raked up from the field and deposited upon a wagon as the latter is drawn along, all the working parts being operated or put in motion from the traction-wheels of the machine.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents the framing of the machine, constructed of two parallel sill-pieces, *a a*, having each a series of vertical or slightly-inclined bars, *b*, attached to them, the upper ends of which are secured to two parallel bars, *c c*, connected by cross-ties *d*. The sill-pieces *a* are horizontal; but the upper bars, *c c*, are slightly inclined, their front ends being higher than their back ends, as shown clearly in Fig. 1. This framing A is supported by two pairs of wheels, B B'. The back-wheels, B, are placed loosely on a stationary axle, C; but the front wheels, B', are attached permanently to a rotating axle, D, which has a pinion, *d*<sup>x</sup>, on each end of it, and these pinions gear into endless racks E E, which are allowed to slide up and down, said racks having plates attached to their outer sides, which plates are fitted in vertical guides F F. (See Fig. 3.)

To the axle D a bar, G, is attached by loose collars *e e*. This bar G has a bar, G', attached to it at right angles, the latter being slotted longitudinally, having the upper end of a rod, H, passing through it, the lower end of said rod being attached by a joint, *a*<sup>x</sup>, to a pendent swivel-bar, *f*, which projects down from the

bar G, and has the axis of a wheel, *g*, connected to it.

Through the upper end of the rod H a rod, *h*, passes horizontally, said rod also passing through a staple, *i*, on the bar G'. The front end of the rod *h* is bent to form a hook, *j*, which catches into the back end of a rod, I. This rod I is fitted longitudinally in the bottom of a bed of a wagon, J, which is within the framing A, and the front end of the rod I is connected by a rope, *k*, with a windlass, K, at the front end of the wagon. By this means the wagon is attached to the framing, and the position of the former in the latter may be varied as desired by taking up or letting out the rope *k*.

At the front part of the framing A there are placed two vertical rack-bars, *l l*, which are connected at their upper ends by a cross-bar, *m*. Between the lower ends of these rack-bars a roller, L, is fitted, the periphery of which is provided with teeth *n*. The rack-bars *l l* have pinions *o o* gearing into them, said pinions being on a shaft, M, which has a pulley, N, at one end of it, to which a rope, *p*, is attached.

O is a brake, which is composed of a bar, *r*, pivoted at its upper end to the framing A, and having its lower end connected to a lever, *s*, by actuating which the upper part of the bar *r* is made to press against the pulley N, the bar *r* being somewhat elastic to admit of a yielding movement under the action of the lever *s*.

In the back part of the framing A there is placed a vertical sliding frame, P. This frame is attached at its end to vertical bars *t t*, arranged in such a manner as to slide vertically in the framing A, and in the frame P there is placed a vertical endless rake, Q, which is formed of a series of parallel rods, *u*, connected at their ends by metal links *v*. (See Fig. 4.) On the ends of the rods *u* there are placed rollers *w*, which work in endless guides *a'* at each side of the frame P. The rods *u* work over notched wheels *b'*, which are placed on a shaft, R, in the upper part of the frame P. The rake Q is provided with teeth *c'*, which are constructed of wire, bent in the form as shown clearly in Fig. 4. These teeth are attached at one end to the rod *u*, the teeth of one rod being bent or wound around them and fastened into the rod *u* immediately in front of it. The free or disengaged parts of the teeth are curved,



as shown in Fig. 1, and the manner in which said teeth are attached to their rods  $u$  will be seen by referring to Fig. 2. By this arrangement the teeth are held or retained in proper position while the rake is in operation, being prevented from inclining backward under the resistance offered them by the grass. The rake  $Q$  is operated from one of the wheels  $B$ , which has a toothed wheel,  $S$ , attached concentrically to it, said wheel  $S$  gearing into a wheel,  $T$ , on one end of a shaft,  $U$ , which is fitted horizontally in the upright bars  $t\ t$  of the frame  $P$ . On the opposite end of the shaft  $U$  there is a pulley, around which a belt,  $W$ , passes, said belt also passing around a pulley,  $X$ , on the shaft  $R$  in the upper part of the frame  $P$ . The rake  $Q$  may be rendered inoperative at any time by elevating the frame  $P$  so that the wheel  $T$  will be thrown out of gear with the wheel  $S$  on the wheel  $B$ . This elevating of the frame is effected by means of a lever,  $Y$ , which is attached at right angles to one end of a shaft,  $Z$ , having arms  $d^x$  at its ends, as shown by the dotted lines in Figs. 1 and 2.

In the upper part of the framing  $A$  there is an endless rake or carrier,  $A'$ , which is formed of a series of parallel rods,  $e'$ , connected at their ends by links  $f'$ , which are constructed precisely the same as the links  $v$  of the rake  $Q$ . The ends of the rods  $e'$  have rollers  $g'$  on them, which work on endless guides  $h'$  at each side of the framing. The rods  $e'$  are connected by metal links  $i'$ . (Shown in Fig. 4.) These links retain the rods  $e'$  in proper position, preventing them from turning. Each rod  $e'$  has a series of teeth,  $j'$ , attached to it, said teeth being slightly curved, as shown in Fig. 1. The rake or carrier  $A'$  has its rods  $e'$  working over notched wheels  $k'$ , placed on a shaft,  $l'$ , in the framing, and this shaft  $l'$  has a toothed wheel,  $B'$ , on it, which gears into a toothed wheel,  $C'$ , on the shaft  $R$  in the upper part of the frame  $P$ .

The operation is as follows: The machine is drawn along by the team attached to the wagon  $K'$ , the latter being provided with a body of slat-work, in order to insure capacity with lightness. The endless rake  $Q$  is moved in the direction indicated by the arrow 1, through the medium of the gearing  $S\ T$ , from one of the back wheels  $B$  of the machine and the belt  $X$ . The rake  $Q$  takes up the hay from the ground, said rake being adjusted higher or lower, as desired, by operating the lever  $Y$ , and the hay is taken from the rake  $Q$  by the rake or carrier  $A'$ , which is moved in the di-

rection indicated by arrow 2, through the medium of the gearing  $B'\ C'$ . The rake or carrier  $Q$  discharges the hay upon the roller  $L$ , which deposits it in the wagon  $J$  and presses it down therein, the pressure of said roller being due to its own gravity only; or, if necessary, an additional pressure can be given by forcing down the roller through the medium of the rope  $p$  and pulley  $N$ , the pressure of the roller being maintained by applying the brake  $O$  through lever  $s$ . The wagon  $J$  is drawn along with a constant movement—that is to say, has the same speed as the team. The framing  $A$ , however, has a variable movement given it through the medium of the pinions  $d^x\ d^x$  and racks  $E\ E$ . The pinions  $d^x\ d^x$ , it will be seen, of course rotate with the wheels  $B'$ , and they work entirely around the racks  $E\ E$ , which are what may be termed “endless” ones. When the pinions are on the upper surfaces of the racks the speed of the framing  $A$  is slower than that of the wagon  $J$ , and the roller  $L$  will press down the hay from the front toward the back end of the wagon, and as the pinions pass around underneath the racks the framing will be increased in speed a trifle over that of the wagon, and the roller will press down the hay from the back toward the front end of the wagon.

By this arrangement it will be seen that the wagon will be evenly loaded and the hay properly compressed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The sliding endless racks  $E\ E$  in the framing  $A$ , in combination with the pinions  $d^x$  on the axle  $D$  of the wheels  $B'$ , all arranged to operate substantially as described.
2. The roller  $L$ , fitted between the lower ends of the rack-bars  $l\ l$ , arranged substantially as shown, when said roller is used in combination with the endless rakes  $Q\ A'$  and the wagon  $J$ , for the purpose specified.
3. Placing the rake  $Q$  in a vertically-adjustable frame,  $P$ , arranged, as shown, to admit of the adjustment of said rake relatively with the ground, as set forth, and also for the purpose of rendering it operative or inoperative, as desired.

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Witnesses:

J. E. OWENS, 2d,  
C. MAPLES.