

(No Model.)

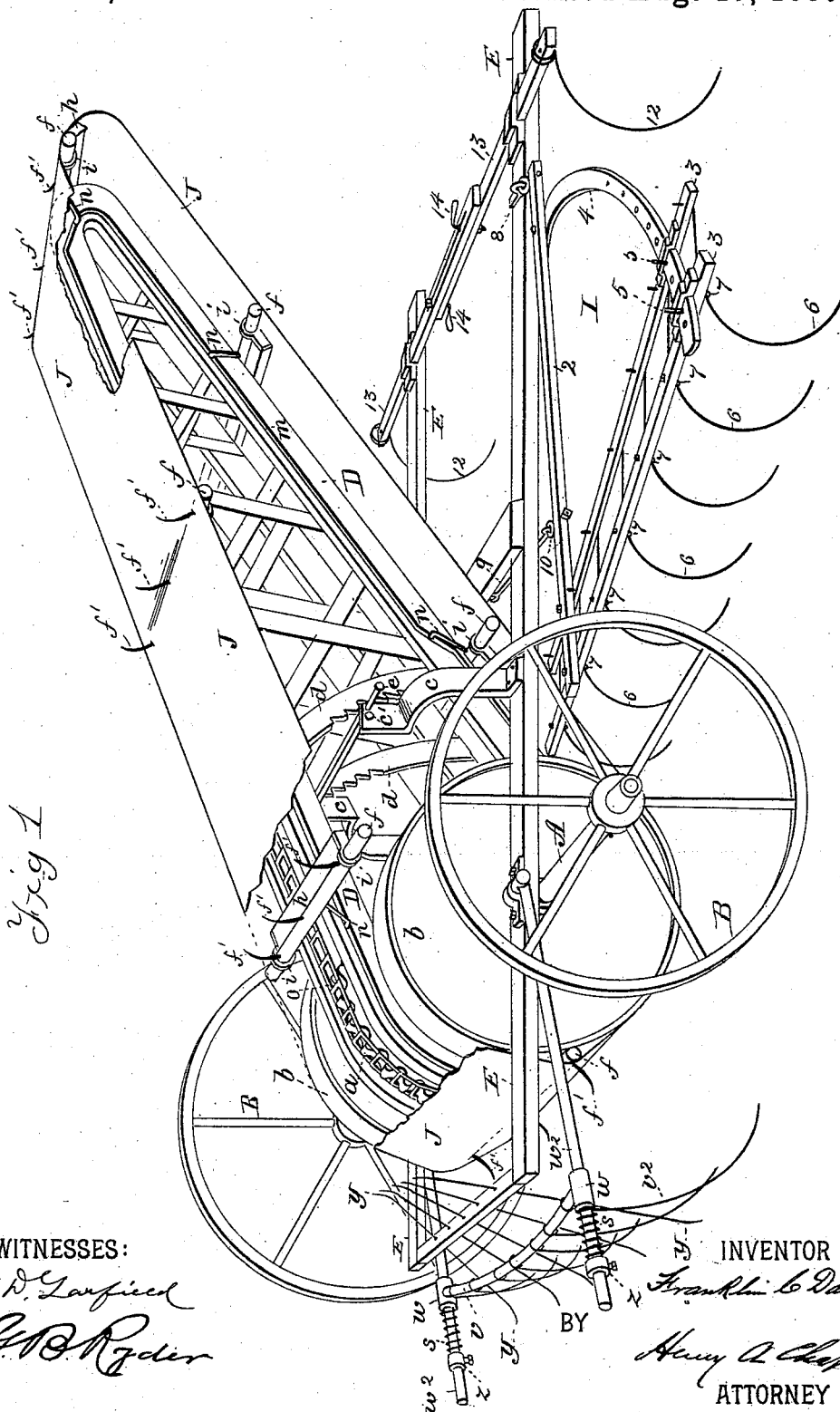
2 Sheets—Sheet 1.

F. C. DAVIS.

COMBINED HAY RAKER AND LOADER.

No. 347,578.

Patented Aug. 17, 1886.



WITNESSES:

J. D. Langford
E. B. Ryder

INVENTOR

Franklin C. Davis

BY

Harry A. Chapin
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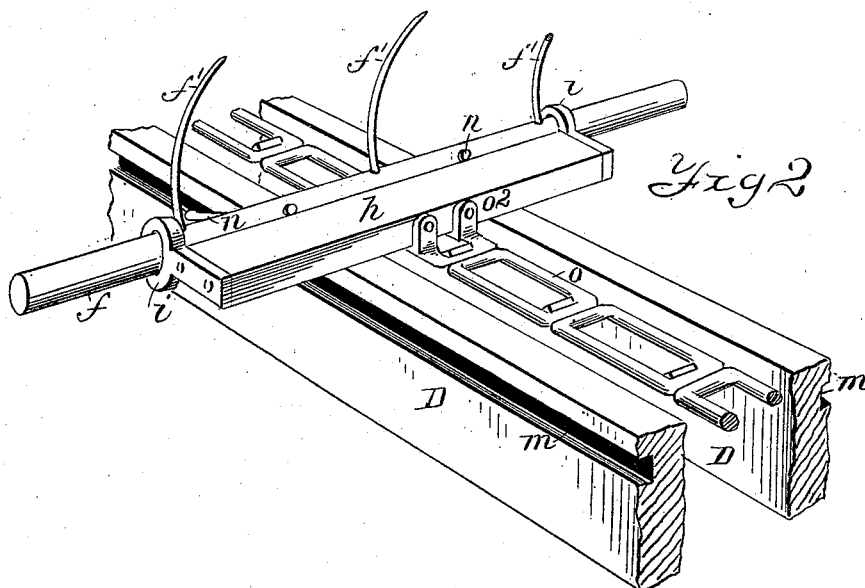
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UNITED STATES PATENT OFFICE.

FRANKLIN C. DAVIS, OF SPRINGFIELD, MASSACHUSETTS.

COMBINED HAY RAKER AND LOADER.

SPECIFICATION forming part of Letters Patent No. 347,578, dated August 17, 1836.

Application filed June 2, 1885. Serial No. 167,453. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN C. DAVIS, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Combined Hay Rakers and Loaders, of which the following is a specification.

This invention relates to improvements in combined hay rakers and loaders, the object being to provide, in machines of this class, wing-rakers and separators of an improved construction, and improved hay gathering, conducting and elevating devices, as herein-
after set forth.

In the drawings forming part of this specification, Figure 1 is a perspective view, showing part of the elevator-apron broken away, of a combined raker and loader embodying my improvements. Fig. 2 is a perspective view of a section of the elevator-frame, the drive-chain, and one of the traveling rakes and the bar by which it is connected with the drive-chain.

In the drawings, A is the axle, having thereon the usual carrying and traction wheels, B, which are adapted, by any well-known suitable means, to engage with the axle, and rotate the latter when the machine moves forward, and to run loosely thereon when it moves in the opposite direction, as is usual in such machines.

The elevator-frame D is provided near its lower end with suitable bearings, through which the axle A passes, whereby provision is made for hanging the said frame on the axle, so that it is permitted to have a vibratory motion thereon, to elevate and depress its upper end, as hereinafter described. A sprocket-wheel, *a*, is fixed on the axle between the sides of the frame D, at its lower end, and on each side of the latter is fixed also on the axle a disk, *b*.

A frame, E, of rectangular form, is suitably hung on the axle A, and constitutes, partially, a support for the elevator-frame D, and for other parts of the machine, and provides means for supporting the latter behind a cart upon which the hay is loaded. Any convenient means may be adopted for connecting the raker and loader with said cart. A sup-

porting-post, *c*, is secured on each side of frame E, near the sides of the elevator-frame, whose upper ends are united by a bolt, *c'*. A removable bolt, *e*, passes through the posts *c*, in close proximity to the teeth of two curved ratchet-plates, *d*, which bolt is drawn out when it is desired to lower the elevator or let its high end swing downward, after which the bolt *e* is replaced, and in practice passes between two of the teeth of the plates *d*. When it is found desirable to swing the end of the elevator upward to deliver the hay at a higher point, the operator lifts it, swinging it on the axle, and the posts *c* spring sufficiently to allow the points of the said teeth to slip over or by the bolt *e*, and to cause the teeth to engage with the bolt and retain the elevator in such position as it may be swung to.

A drive-chain, *o*, having at intervals therein a link, on which is one or more projections, *o'*; (see Fig. 2,) passes around the sprocket-wheel *a*, and thence over the high end of the elevator, between the sides thereof, and back to said wheel, making an endless chain. Any convenient roller is placed in the end of frame D, over which said chain runs to reduce friction.

The traveling rakes *f* in practice, as many as may be desired, consist of a cylindrical bar 80 having the curved teeth *f'* thereon, connected to the cross-bar *h* by the bearings *i*, in which it has a rocking motion. Two hooks, *n*, are fixed in the bar of the rake *f*, whose bent ends engage in grooves *m* in the sides of the elevator-frame D, whereby the rake is secured 85 to the said frame and is caused to take the requisite positions to bring the teeth *f'* at proper degrees of elevation and inclination, as the rake passes over frame D, to enable said teeth to properly engage with and move the hay, and to become completely disengaged from it when they pass from the high end of the elevator under the latter. The cross-bar *h* is secured to the projections *o'* on the drive-chain, as shown in Fig. 2, and both of said bars lie on the frame D, whereby they are made to assume proper positions as they move over the frame.

If desired, a belt or ropes may be used in place of the drive-chain; but the latter best serves the requirements of a machine of this

class, for it maintains a more uniform length than do the substitutes named.

An endless apron, J, preferably of canvas or similar material, is placed on the elevator-frame D, as shown in Fig. 1, covering the face of the latter and the traveling rakes *f*, the teeth *f'* of the rakes passing through and projecting above the apron, as shown.

A drag-rake consisting of the curved bar *v*, having suitable teeth, *v'*, thereon, has a sleeve, *w*, secured to each end of the curved bar, which sleeves are free to slide on the rake-bars *w'*, which support the drag-rake, said bars being pivotally connected to the frame E, as shown. Collars *z* are secured on the bars *w'*, and coiled springs *s* are placed between the sleeves *w* and said collars to relieve the dead pressure of the hay as it crowds against the teeth *v'* while being started upward by the traveling rakes.

To better guide the hay in its movement from the ground upward onto the apron J and to direct it toward the center of the latter, guide-rods *y* are secured in the rear cross-bar of frame E, or on some other convenient part of the machine, whose lower ends project between the teeth of the drag rake, and whose upper ends converge over the center of the apron.

A wing-rake, I, is attached on each side of the frame E, (one only being shown in the drawings,) and is constructed as follows: A frame consisting of the bar 2 and the two parallel bars 3 3, the latter pivoted to the former, is provided, and to bar 2 is fixed the curved metallic bar 4, passing through guide-straps on the bars 3. Bar 4 is provided with suitable pin-holes, in which pins 5 are placed to hold the ends of bars 3 in such positions on bar 4 as they may be moved to. The teeth 6 have their upper ends secured to the inner one of the bars 3, and they are attached to the outer bar by eyebolts 7, through which they pass freely.

The wing-rake is hung on frame E by the link-bolts 8 near one end of bar 2, and by the rod 9, connected with an eyebolt, near the rear end of said bar, and with a similar bolt under frame E.

By means of the above-described hinge-connections between the wing-rake and frame E the rake is free to follow the surface of the ground and to be swung up against the elevator-frame D.

As above mentioned, the teeth 6 of the wing-rake have a connection with the parallel bars 3, the effect of which is that howmuchsoever the outer ends of the bars 3 are swung outward or inward on the curved bar 4 the lower ends of the teeth point in the same direction, which is forward, and when the outer ends of the parallel bars are swung toward frame E, by which the hay gathered thereby is concentrated under the elevator, the rake-teeth are swung more nearly side by side, forming a closer wall for the guidance of the hay.

A separator-tooth, 12, is supported on each

side of frame E, each one being attached to the end of an adjustable sliding bar, 13, held in a suitable bearing on said frame, said sliding bars having their ends slotted and connected by a hand screw or screws, 14, whereby the teeth 12 may be moved out or in to bring them nearly in front of the outer ends of the swinging bars 3, and serve to divide or separate masses of hay which may be too great to be conveniently controlled by the wing-rakes and the elevator.

The operation of the detail parts of the machine is above described, and the general operation thereof is as follows: The machine is secured to the cart on which the hay is to be loaded in any convenient manner, and whereby the frame E is maintained in substantially a uniform position. In working, the wing and drag rakes occupy the positions shown in Fig. 1. The machine having been started, the traveling rakes *f* and apron J have a continuous motion around the elevator-frame D, their teeth *f'* engaging with the hay, which is gathered in by the wing-rakes under the machine and made by the drag-rake to pile up between the latter and said apron as the latter and the rakes *f* move over the periphery of the disks *b*, which support them at that point, the guide-rods *y* serving the above-described purpose. As the hay is carried from the drag-rake upward and toward the upper end of the elevator-frame, which extends over the cart, the rake-teeth *f'* take about the positions shown to properly engage with and move the hay; but as each rake passes over the upper end of the elevator it is, by the engagement of its hooks *n* with the grooves *m* in frame D, made to roll in its bearings and throw the teeth backward, as shown, and then they are drawn downward and from under the hay, entirely disengaging themselves therefrom, and leaving it free to pass into the cart.

What I claim as my invention is—

1. In a combined hay raker and loader, the combination of the frame D, having grooves in its sides, the sprocket-wheels, drive-chain, and rakes attached to cross-bars, and having hooks extending into the grooves in the frame D, and the endless apron J, overlapping the frame D and extending at the sides thereof, substantially as described.

2. The drag-rake consisting of the curved bar *v*, provided with the teeth *v'*, and having a sleeve, *w*, on each end, combined with the rake-bars *w'*, having thereon the collars *z*, and the springs *s*, substantially as set forth.

3. In combination with the bar *v*, having the teeth *v'* thereon, the guide-rods *y*, secured to frame E, and projecting between said teeth, and having their upper ends converging over the apron J, substantially as set forth.

4. The combination, with the elevator-frame D, having the curved ratchet-plates *d* thereon, of the posts *c*, united by a bolt, *c'*, and provided with the removable bolt *e*, substantially as set forth.

5. The wing-rake consisting of the bar 2,

the parallel bars 3, pivoted to bar 2, the teeth 6, having a connection with both of the parallel bars, and the curved bar 4, providing a support for the ends of the latter, combined
5 and operating substantially as set forth.

6. The combination, with the frame E and the swinging rakes, of the separator-teeth 12

and the adjustable sliding bars 13, substantially as set forth.

FRANKLIN C. DAVIS.

Witnesses:

GEO. W. DAVIS,
H. A. CHAPIN.