

J. RICHARDS & H. E. BRANDENBURG.

Hay Loader.

No. 229,469.

Patented June 29, 1880.

Fig. 1.

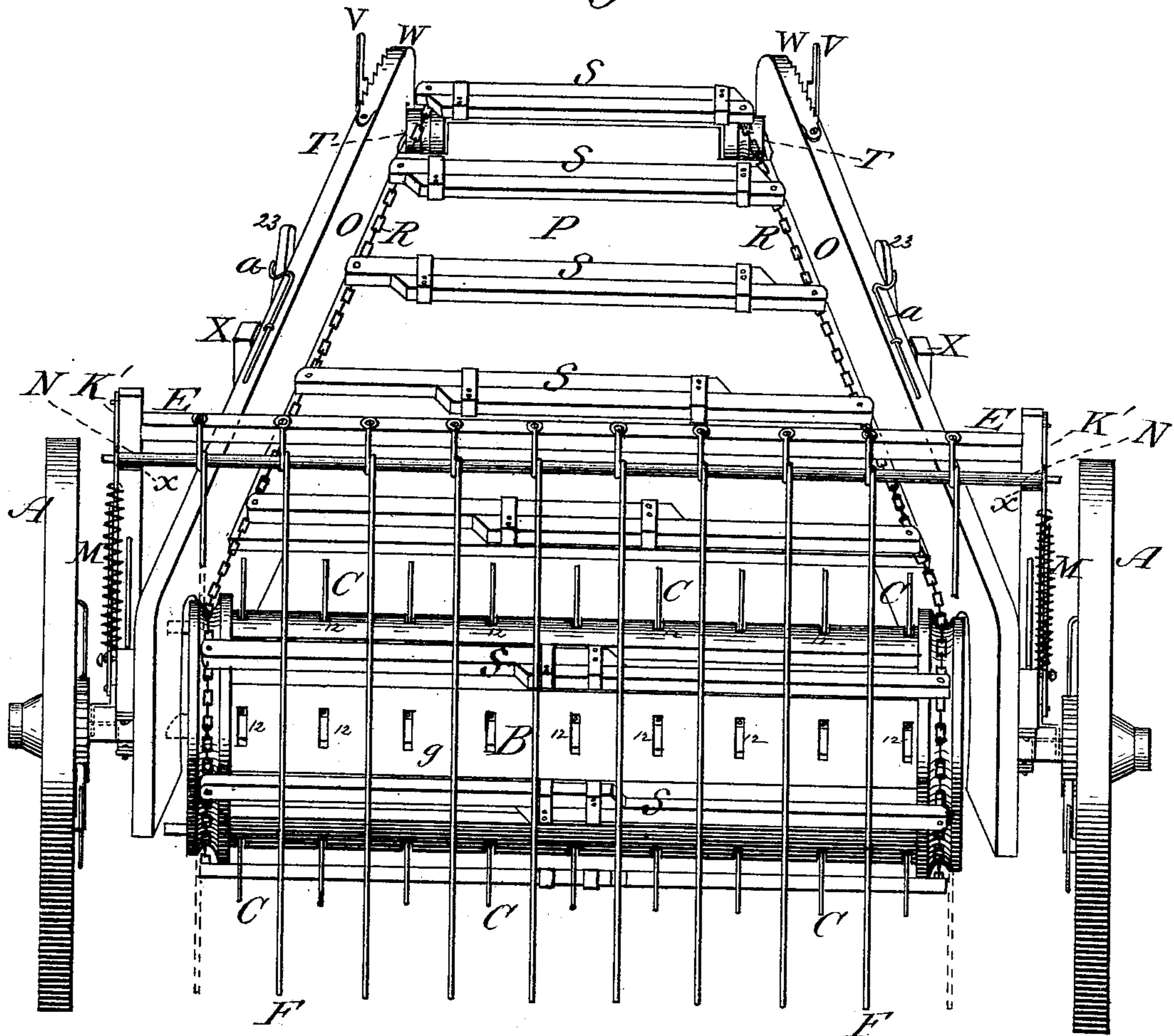


Fig. 3.

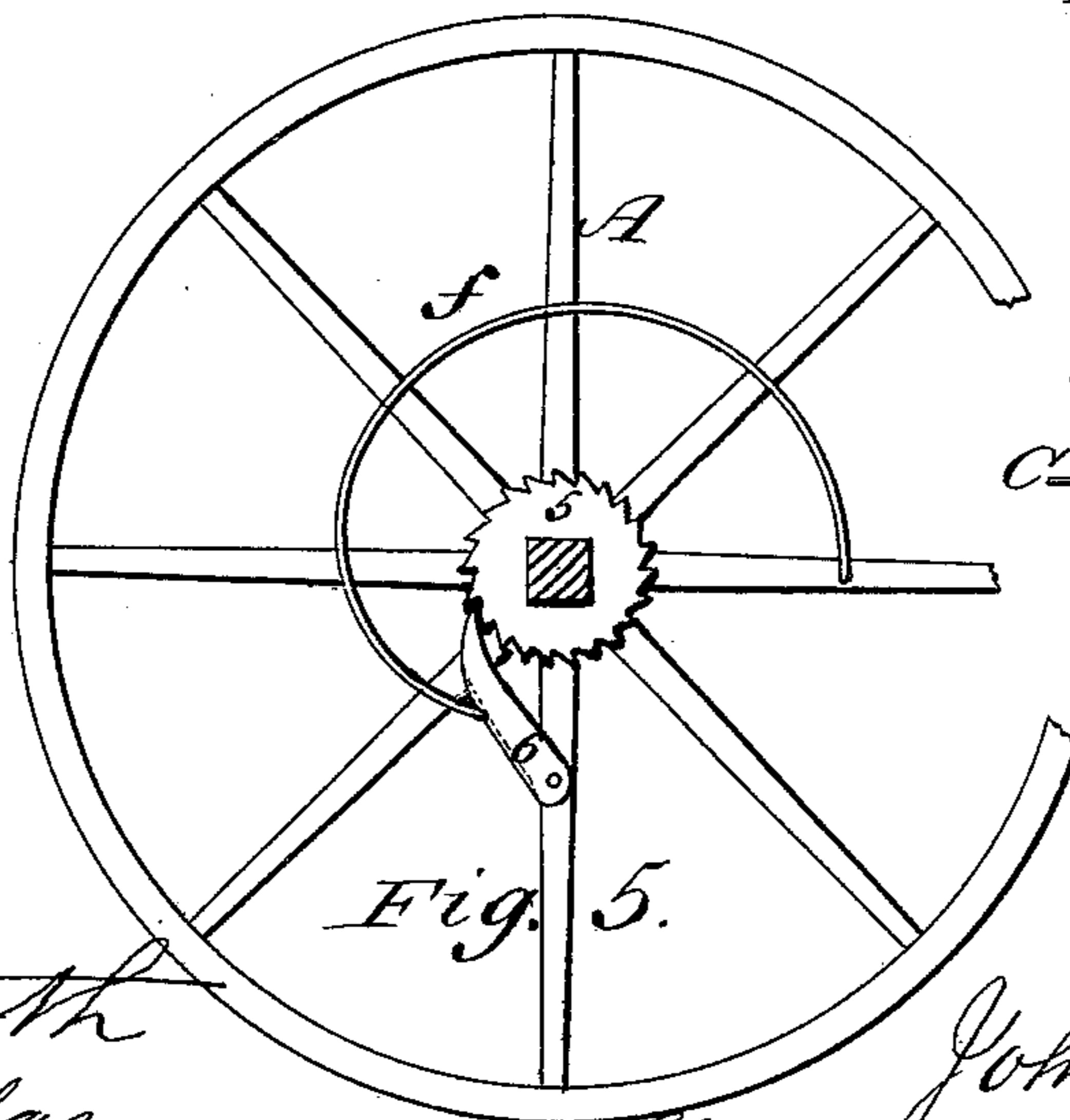
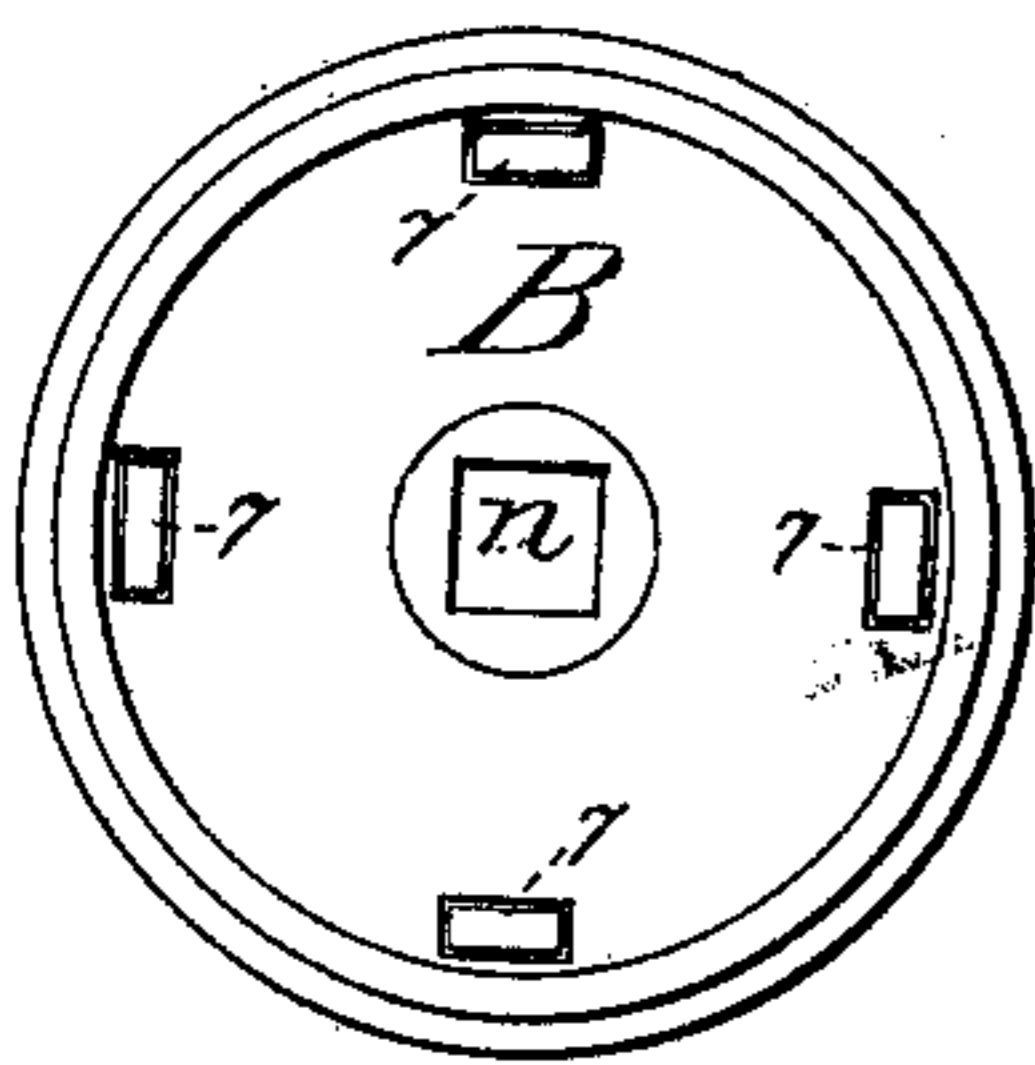


Fig. 5.

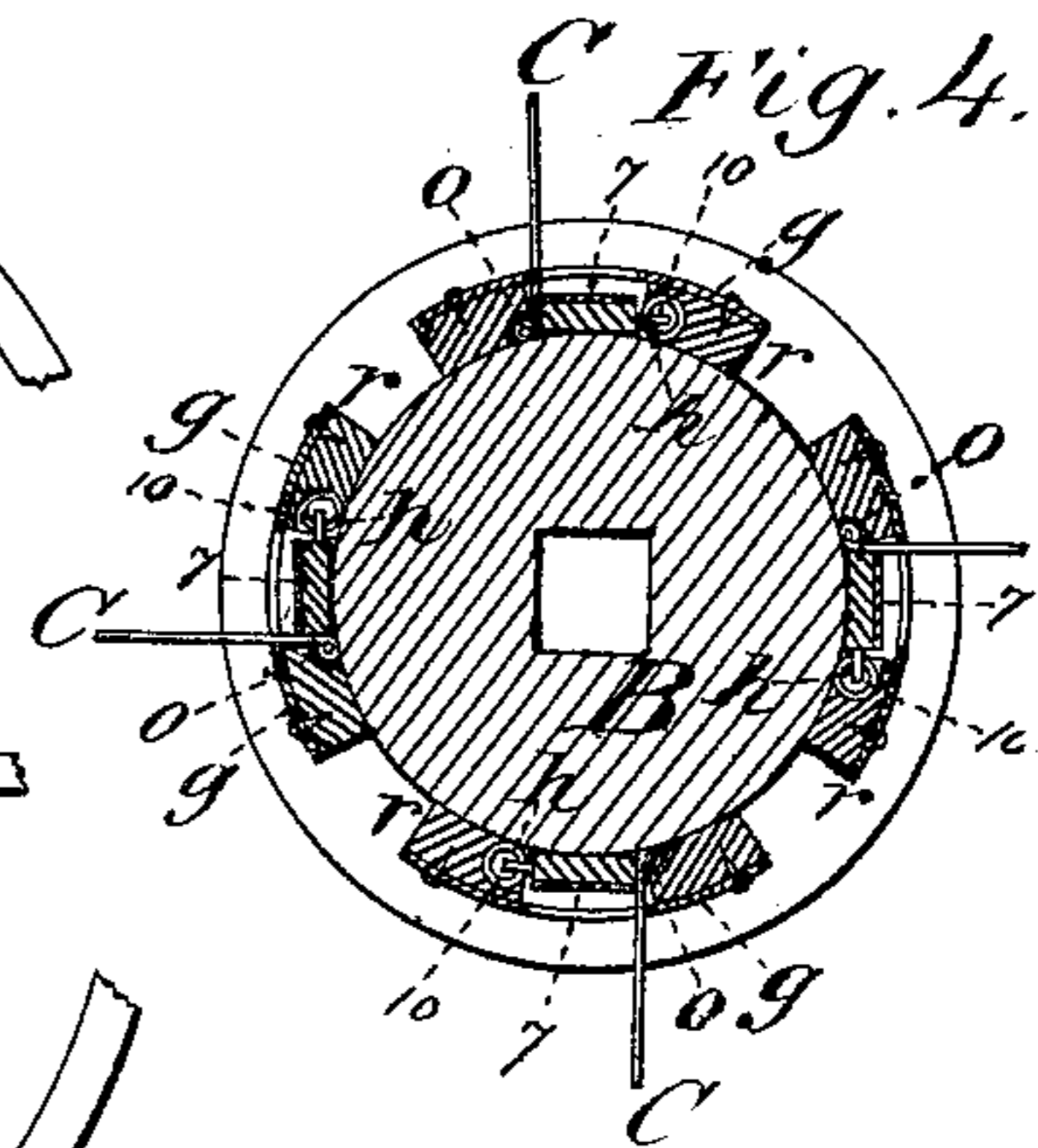


Fig. 4.

Attest:

W. Woodworth  
Will. E. Douglas.

Inventors:

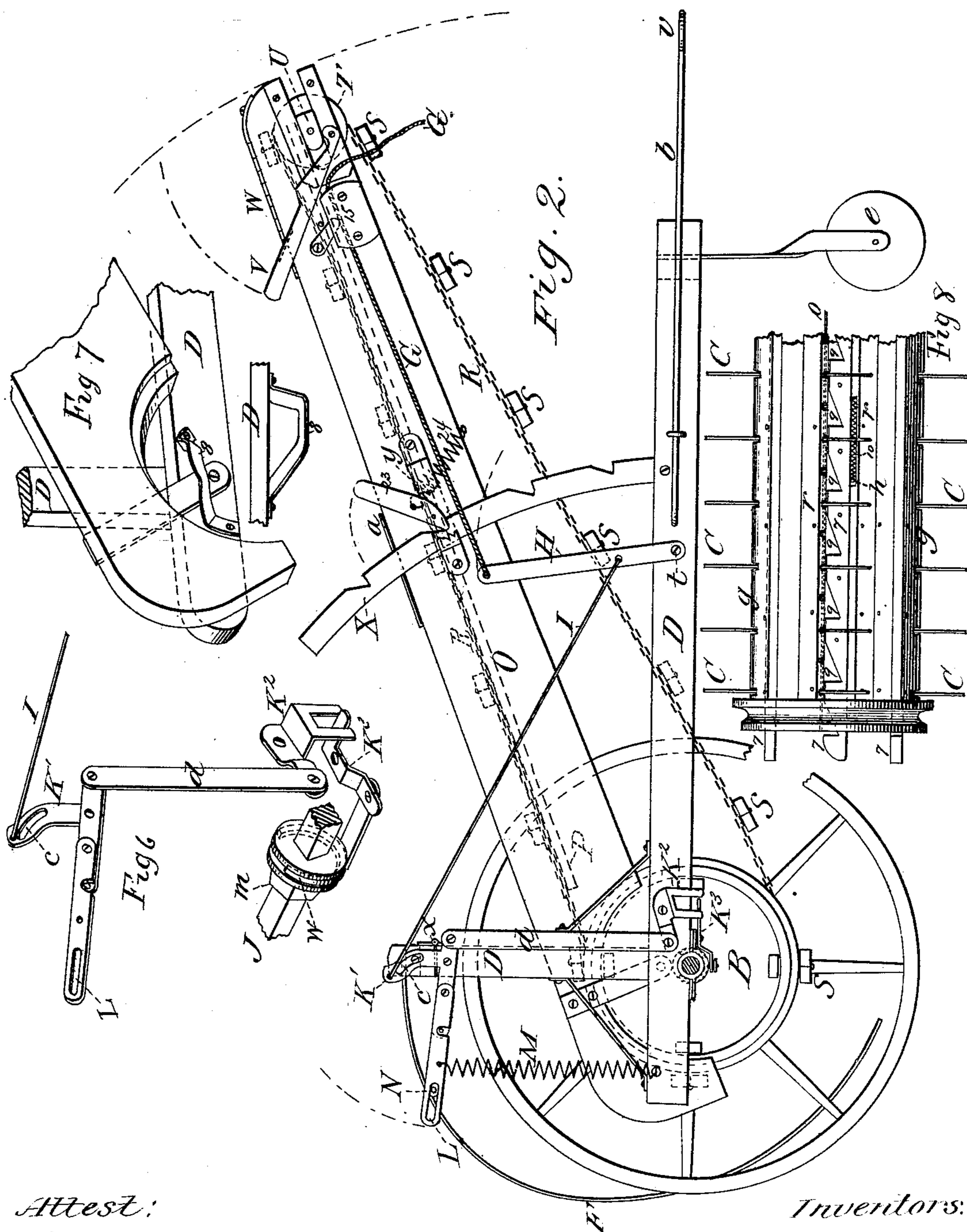
John Richards  
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# UNITED STATES PATENT OFFICE.

JOHN RICHARDS AND HENRY E. BRANDENBURG, OF COLUMBIA CITY, IND.

## HAY-LOADER.

SPECIFICATION forming part of Letters Patent No. 229,469, dated June 29, 1880.

Application filed June 26, 1879.

*To all whom it may concern:*

Be it known that we, JOHN RICHARDS and HENRY E. BRANDENBURG, of Columbia City, in the county of Whitley and State of Indiana, have invented certain new and useful Improvements in Hay-Loaders, of which the following is a full specification.

Our invention relates to that class of hay-loaders which, in practical operation, are attached to the hind part of a wagon and load the hay thereon by means of an endless elevating-carrier.

The invention will first be described, and then pointed out in the claims.

In the accompanying drawings, in which similar letters and figures refer to like parts, Figure 1 is a rear elevation of our hay loader and rake, showing the principal working parts of the machine. Fig. 2 is a side elevation. Fig. 3 represents one end of the drum. Fig. 4 is a central transverse sectional view of the drum. Fig. 5 shows one of the drive-wheels. Figs. 6, 7, and 8 are views in detail, to show more clearly certain devices described.

Referring to the various parts of the machine by the letters and figures used to indicate the various parts, A is a drive-wheel. B is the drum. C C are the rake-teeth in the drum. D is the frame. E is the rake-head of the after rake, with teeth F. G is the rope, extending from the lock-catch 15 to top of lever H. I is a rod extending from lever H to upper arm of angular lever K', which is connected with angular lever K<sup>2</sup> by means of bar d, lever K<sup>2</sup> being connected with angular lever K<sup>3</sup> by a fork, as shown, and K<sup>3</sup> is jointed to fork w, which incloses the plug m, as shown. This plug m is pierced by the main axle J, which is squared to fit the square mortise or hole through the plug. The plug is moved back and forth on the axle by the movements of fork w, between the prongs of which the plug is free to follow the movements of the axle.

L is the slot in the upper end of extension-arm of lever K'. M is a coiled spring to hold down the rake-teeth F, which are attached to rod N, as shown.

O is the carrier-frame, joined to the carrier bottom P. R is the carrier-chains; S S, the folding or adjusting slats, supported and moved by the carrier-chains R, and, by their

sliding motion, permitting the contraction of the carrier from the drum upward to the top of the carrier-frame, as shown. T T are pulleys at upper end of carrier-frame for chains R to pass over.

The sliding box U, lever V, and ratchet W constitute the tightener for giving the proper degree of tension to carrier-chains R R. X X are curved adjusting-standards, permanently attached to frame D, one on each side of carrier-frame O. These standards are used for adjusting the inclination or elevation of carrier-frame O, and are provided with appropriate notches or ratchet-teeth, a latch or pawl, 23, a pawl-spring, 24, and a brace or support, Y, whereby the desired elevation or inclination of carrier-frame and carrier is readily effected.

a is a small spring-catch to hold the pawl 23 out of the notches in the standards X, as may be desired, when elevating or lowering the carrier and carrier-frame. b is the attaching-bar, by the loop of which, at v, the loader is attached to the wagon on which the hay is to be loaded. c is a slot in upper end of lever K'. e is a small wheel under the front of frame D, to support the front part of the loader when not in use. f is the pawl-spring on drive-wheel. 6 is the pawl, and 5 the ratchet-wheel on the drive-wheel. g is the covering of the drum, having the slots 12 as guides and supports for the elevating-teeth C. 7 are slides, (one for each row of teeth,) having notches 9, (one for each tooth,) with inclined edges, as shown.

When a slide is in the position shown in Fig. 2 the teeth C are held rigidly in position for service; but when the slide is pressed to the left the teeth fall into the notches and are free to move backward in slots 12 and permit the folding slats S S to pass over the teeth when the loader is in operation. The slides are pressed to the left by the cam 8, which is permanently attached to the inner part of frame D, and they are thrown to the right to tighten the teeth C by means of coiled springs 10, inserted in the side of bar r, and one end pressing against pin h, which is firmly fixed in slide 7, as shown.

The bars r constitute the main body of the drum, extending its whole length from one end or head to the other, the ends or heads of

the drum being firmly attached to the extreme ends of bars *r*.

The elevating-teeth are loosely attached to rods *o*, which also extend the whole length of the drum, and serve as a means of tightening the drum by screws and burrs, as shown. The heads of the drum also serve as pulleys for the carrier-chains R R.

The bars *r* guide and support the action of the slides 7, the coiled springs 10, and teeth C, as shown.

*m* is the square movable plug, and *n* the square mortise in the drum-head.

Rake-head E is hinged to the upright portion of frame D at *x*, to permit motion of rake-head, as shown. Lever H, rod I, lever K', and its extension-arm are connected with and give motion to similar parts on the opposite side of the loader by means of the rod *t*, extending through frame D, and firmly fixed to the lower end of lever H, as shown.

The practical operation of our invention is as follows: We attach the loader at *v* to the rear axle of the wagon on which the hay is to be loaded. The wagon is moved forward, pulling the loader after it and over the hay to be loaded, which hay may be left scattered on the ground as when mown, or as spread for drying. The forward motion of the drive-wheels imparts motion to the drum, and it gives motion to the carrier-chains by means of the pulleys or drum-heads. The rake-teeth F gather the hay from the ground under the drum. The elevating-teeth C lift the hay from the ground, carry it around and over the drum, and let it off on the narrowing carrier, by which it is conveyed to the top and over the upper end of the carrier on to the wagon to which the loader is attached.

If it is desired to stop the motion of the drum and carrier, we pull on the rope G with sufficient force to raise the rake-teeth F clear of the ground and hay, and by the same act of pulling the rope G we communicate motion through lever H, rod I, lever K', bar *d*, lever K<sup>2</sup>, lever K<sup>3</sup>, and fork *u*, and thereby withdraw plug *m* from mortise *n* at both ends of drum B, whereby the motion of the drum and carrier is stopped; and when we desire to again set the machine in motion it is obvious

that we have only to reverse the action just described.

When turning with the loader in operation the arrangement of the ratchet-wheel 5, pawl 6, pawl-spring *f*, and the mode of attaching the drive-wheels loosely to the axle, as shown, the forward motion of the drum and carrier is kept up, even though one drive-wheel may be revolving much slower than the other, or though one should stop revolving, or its motion be reversed in turning around with the loader in operation.

In speaking of the carrier, we refer to the carrier-chains R R and folding or adjusting slats S S, as shown. These folding slats, by their folding motion when ascending, and widening motion when descending, enable the carrier to adapt itself to the shape of the carrier-frame O, by which the hay, after it leaves the drum, is gradually contracted as it is elevated and carried onto the wagon, by which arrangement we are enabled to have the drum much longer than the width of the wagon on which the hay is being loaded, and yet, by the gradual narrowing of the carrier from the drum upward to the top of the carrier-frame, the hay can be delivered on the wagon within as narrow a space as may be desired.

We claim as our invention—

1. The combination of frame D, with rake-head E and after rake teeth F, the curved adjusting-standard X, with levers H, rod I, lever K', with bar *d*, angular lever K<sup>2</sup>, connected with lever K<sup>3</sup>, joined to fork W, which incloses plug *m* on axle J, substantially as described and set forth.

2. The combination of drum B, having the drum-pulleys at each end of drum, the covering of drum B having slots 12 as guides and supports for the elevating-teeth C, the rods *o*, the bars *r*, the slide 7, with notches 9, with inclined edges, as shown, cam 8 on frame D, and the coiled spring 10, inserted in the side of bar *r*, and one end pressing against pin *h* in slides 7, as set forth.

JOHN RICHARDS.

HENRY E. BRANDENBURG.

Witnesses:

O. H. WOODWORTH,  
WILL. E. DOUGLAS.