

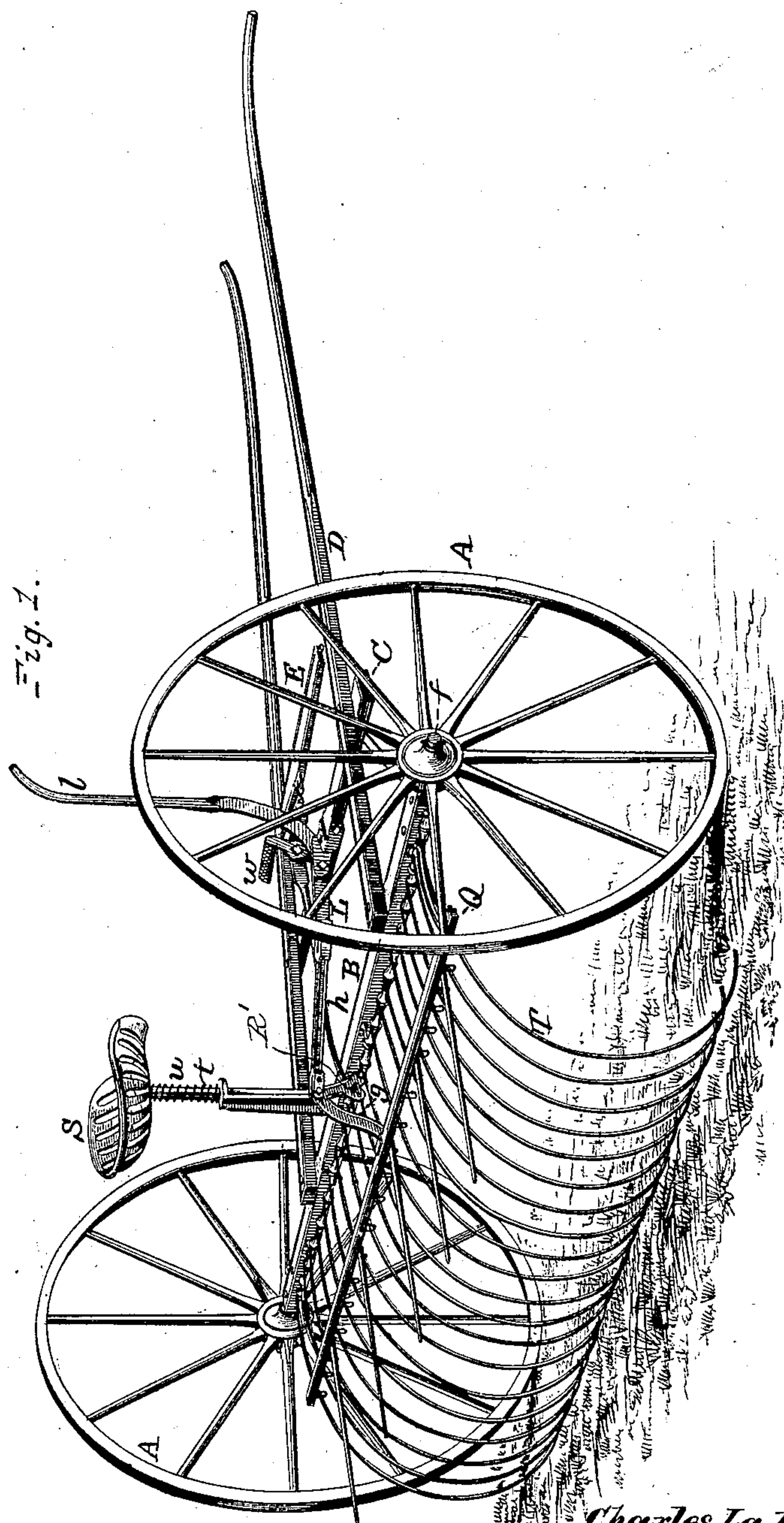
(No Model.)

3 Sheets—Sheet 1.

C. LA DOW.  
HORSE HAY RAKE.

No. 343,131.

Patented June 1, 1886.



Witnesses.  
*J. A. Rutherford*  
*Robert Everett*

*Charles La Dow,*  
Inventor.  
By *James L. Norris,*  
Atty.

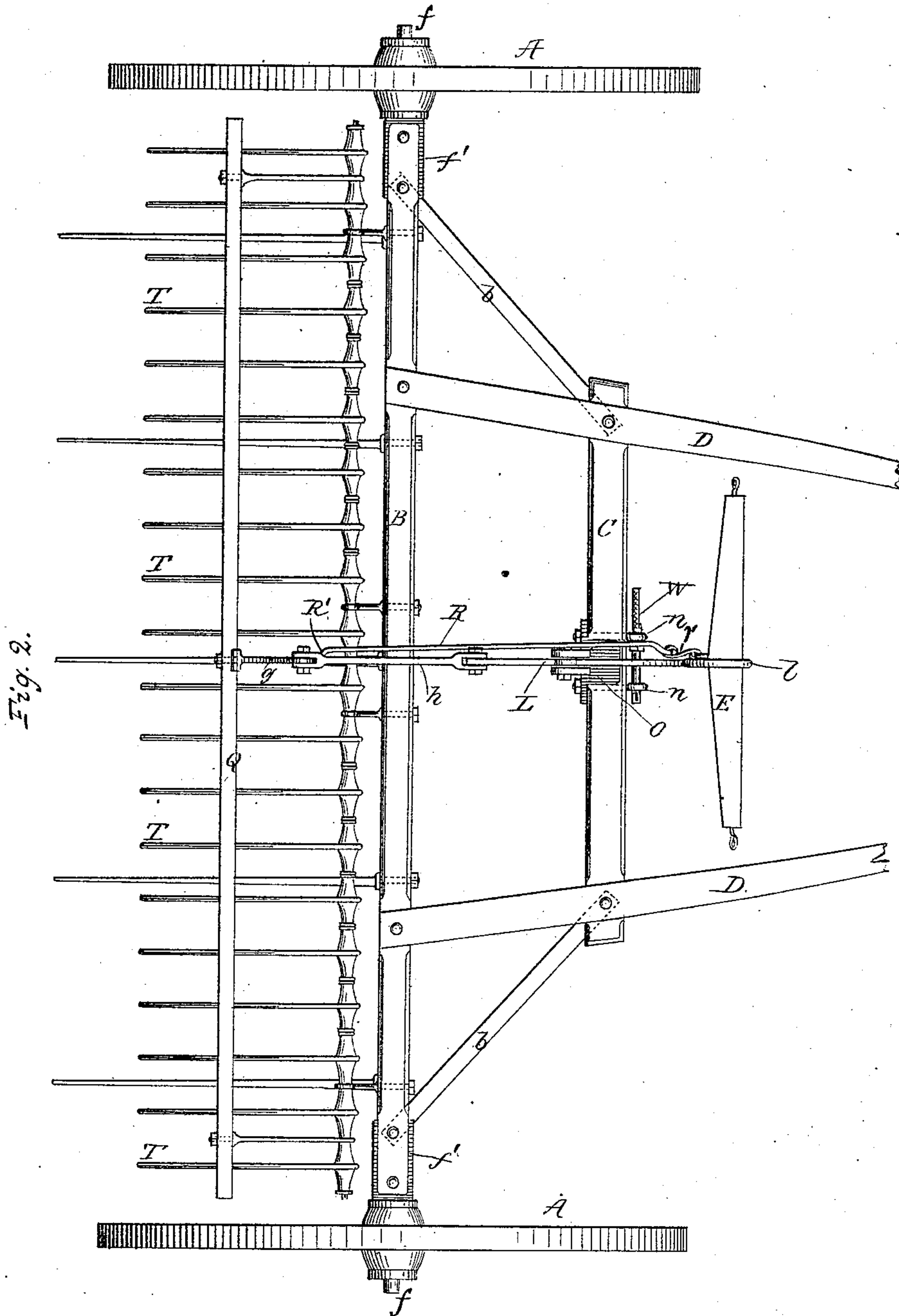
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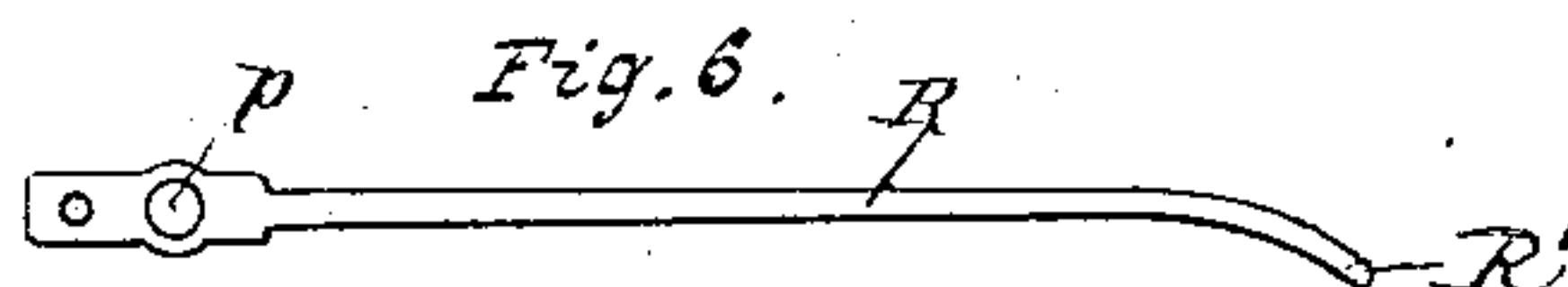
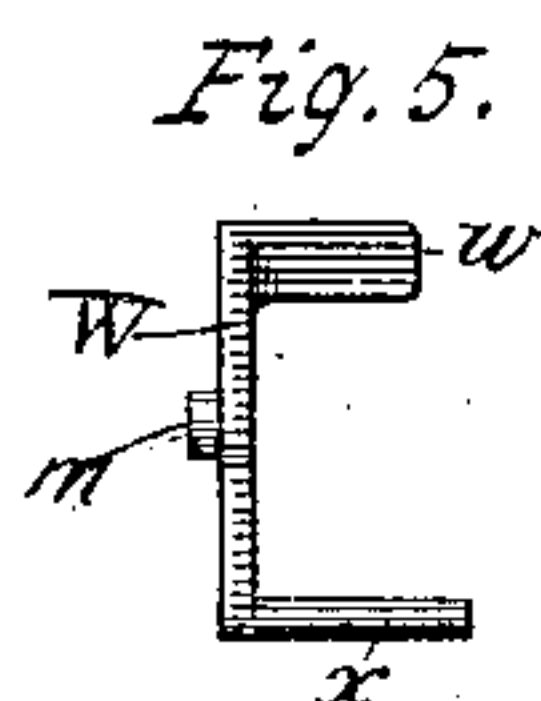
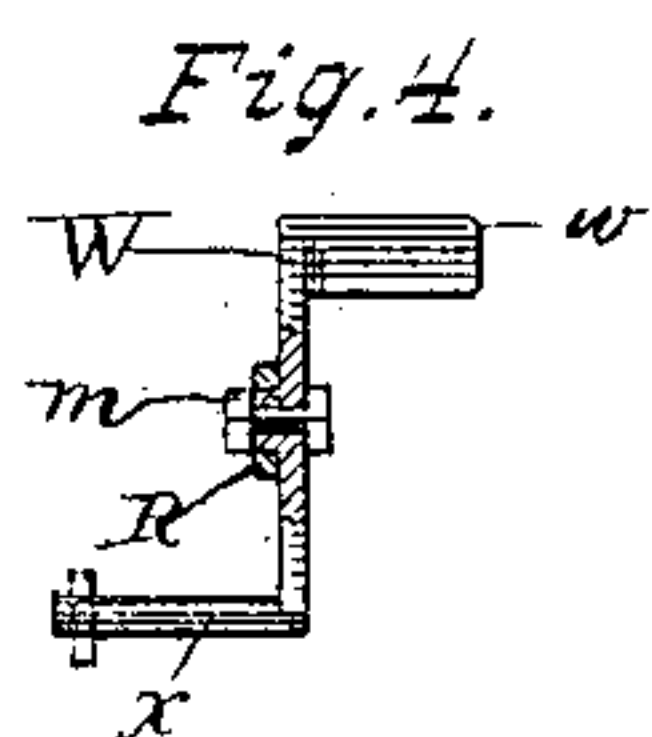
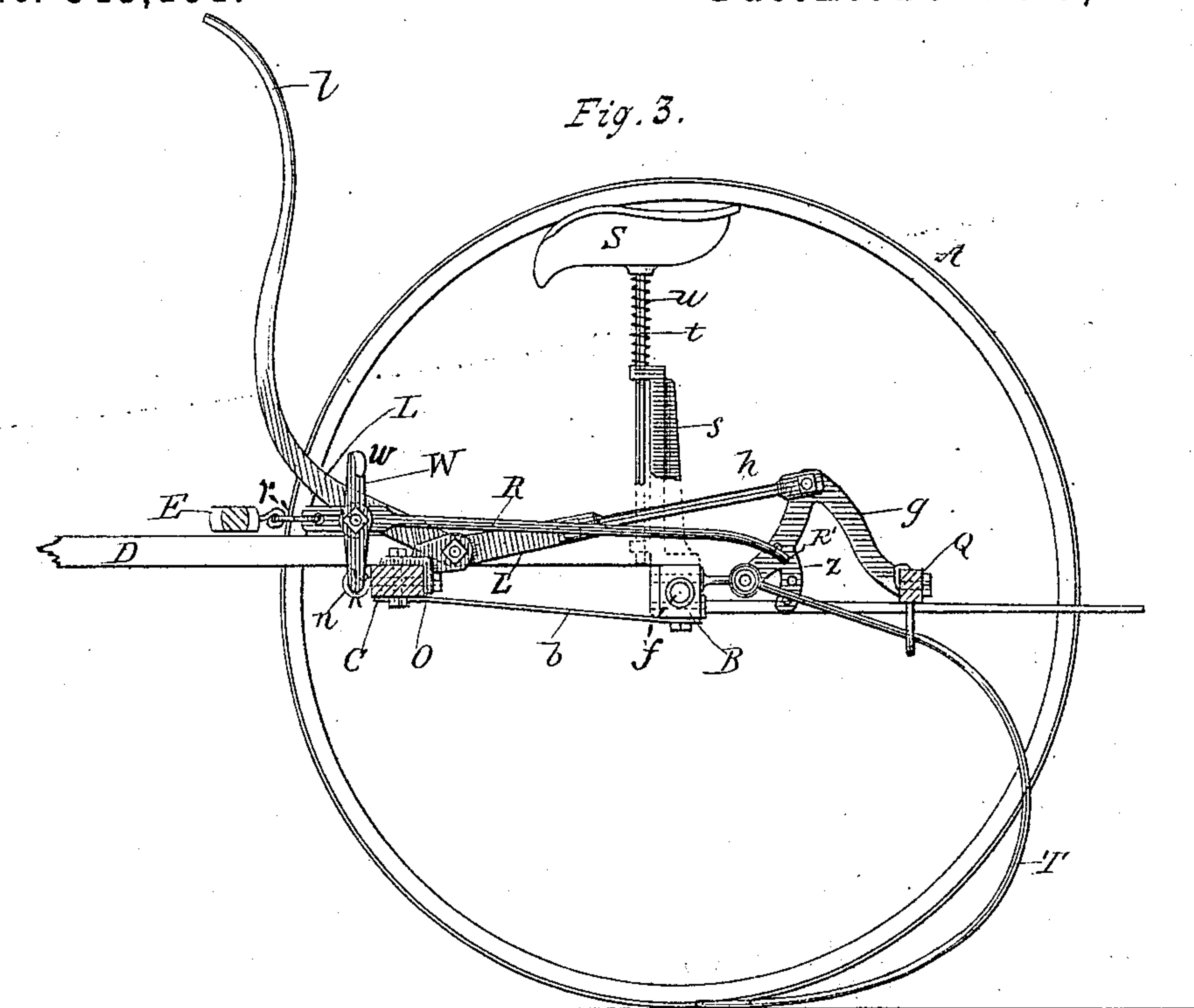
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# UNITED STATES PATENT OFFICE.

CHARLES LA DOW, OF ALBANY, NEW YORK.

## HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 343,131, dated June 1, 1886.

Application filed December 27, 1882. Serial No. 80,283. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES LA DOW, of the city and county of Albany, in the State of New York, have invented certain new and useful Improvements in Horse Hay-Rakes of the class in which the rake-teeth are tilted or lifted to discharge the hay in windrows, of which the following is a specification.

My invention relates to novel features of construction and arrangement of parts, hereinafter described in detail, and specifically pointed out in the claims.

The accompanying drawings represent all my improvements as embodied in one machine in the best way known to me.

Obviously, the details of construction of the parts may be varied in equivalent well-known ways without departing from the spirit of my invention.

Some of the parts may be used without the others, and in machines differing in construction from that herein shown; but I prefer to construct my machine substantially as herein shown and described.

Figure 1 is a view of my machine in perspective. Fig. 2 is a top view. Fig. 3 is a side elevation with one wheel removed. Figs. 4, 5, and 6 are details.

In the drawings, the seat S is mounted in the standard *u*, encircled by the spring *t*, and passing through guides in the standards *s*, mounted on the axle B and constructed in the usual well-known way. I mount on the axle B the shafts D D, and on the under side of the shafts I mount the cross-bar C. From the under side of the cross-bar to the under side of the axle I extend the braces *b b*, pinning the brace and cross-bar to each thill by a single bolt. To each extremity of the axle I fit a socket, *f'*, with non-revolving spindle *f*, on which the carrying-wheel A' is mounted. By this means a skeleton frame, strong, substantial, and well braced laterally and vertically, but light and efficient, is provided, upon which to mount the other mechanisms of the machine, and which varies from other frame structures heretofore made. To the rear of axle I hang or mount the rake, constructed in a usual well-known way, and consisting of a thimble-rod extending along the rear of and parallel to the axle, mounted in eyebolts protruding from said axle, on which rod the teeth,

separately vibratory, are mounted, and retained at regulated distances apart by spool-shaped thimbles or washers. Protruding through the axle rearward and out beyond the rear curve of the teeth at suitable intervals are rigid fingers or cleaner-teeth, which, as the rake-teeth T T are raised, serve to push out from said teeth the accumulated hay. Above the rake-teeth I mount the dumping or tooth bar Q, oscillating from the same thimble-rod on which the teeth vibrate, by means of elongated-eyebolt rods. Each tooth is loosely held to the bar by means of a staple, and so raised with the bar. Midway between the extremities of this dumping-bar I mount a vertically-vibrating angled, or bent three-pronged lever, *g*, whose forward prong is pivoted on the thimble-bar, and whose rearward prong is provided with shoulders to fit over said lifting-bar Q, and is firmly bolted to the bar so the lever will not tilt to the right or left from its vertical plane of vibration. By this means the radii of the arcs through which the lever and the bar move will be the same, since both vibrate from the thimble-rod as a fulcrum. This lever *g*, I bend upward, as shown, and at its upper portion I connect it by means of the bar *h* with the hand-lever L, which I construct in ogee form with the handle at *l*. I pivot the lever L to the rear of the cross-bar C by means of the socket-iron with shoulders O. Obviously, when the lever L is pulled toward the seat S the lever *g* is pulled forward, and, rotating upon the thimble-rod as a fulcrum, its rear arm is raised and so lifts the dumping-bar Q, and with it the rake-teeth, and, conversely, when the lever L is pushed away from the seat S the same mechanism will operate to depress the teeth. I further provide the lever *g* with a horn, Z, extending from a short distance above its fulcrum and curving to the rearward and downward, and preferably concentric to the said fulcrum, and perforated at regulated intervals with holes for the reception of the rear end of the draft-link R. I attach the whiffletree E, by means of a short link, *r*, to the draft-link R, which I extend rearward alongside of the hand-lever mechanism, and curve upward in its rear part to be free of the tooth-heads. The rear end of the link I angle to fit into any one of the holes provided for it in the prong or



horn Z. By this means the draft of the animal upon the whiffletree is conveyed directly to the lever *g*. The draft-link R is provided with a hook, R', which engages the prong Z directly back of the fulcrum on which the lever *g* rotates. All the power applied to the draft-link in the line of draft will operate only to propel the machine forward, and not either to raise or depress the lever—that is to say, the point of application of the power by means of the link to rotate the lever *g* will be on a dead-center with the fulcrum. Obviously, also, according as the link is attached to the lever above or below its fulcrum or center of motion, the power applied to the link will tend, respectively, to elevate or depress the lever, and consequently to elevate or depress the lifting-bar and the teeth; also, obviously, the amount of force the animal must exert through the draft-link to operate the lever *g* may be regulated by adjusting the draft-link in the holes in the lever-horn relatively to its fulcrum, and the point of application of the power as so adjusted may be further regulated and adjusted by raising or depressing the lever *g* by means of the hand-lever L. If the draft-link is adjusted so far above the fulcrum or dead-center that the draft of the animal has a tendency to be constantly raising the teeth, this is readily counteracted and easily resisted by a slight pressure with the hand or foot against the lever L, which will depress the lever *g* and hold it in place. I construct the foot-lever W with bent arms *w x*. I make the bolts which fasten the lever-socket O to the cross-bar C with eyes *n n*, protruding in front of the cross-bar, and utilize said eyes as bearings for the supporting arm or angle *x* of the lever, thus making the foot-lever W and its angled support *x* a rigid structure, said angled support rocking in broad bearings, and thus maintaining the lever erect against lateral strains, and causing it to vibrate only in a vertical plane in the line of draft of the machine. The vertical side of this foot-lever I provide with a circular boss, *m*, Figs. 4 and 5, which fits in a corresponding circular aperture in the forward end of the draft-link R at *p*, Fig. 6, and I fasten the parts together with a washer and bolt, so the draft-link and foot-lever shall have free pivotal motion forward and backward in the line of draft in concert with each other. By this method of construction the foot-lever is held upright to vibrate in a vertical plane without working loose or being wrenched out of place by the pressure upon it at an angle of the driver's foot or by any sidewise pull upon it by the horse; and, also, the draft-link is held in its normal position and prevented from having any side motion across the line of draft, whether the horse pulls in line with or at an angle with said draft-link. Obviously, when the foot-lever is operated it rocks forward on its supporting-arm *x*, and acts through the draft-link R to raise the lever *g*, and so to dump the rake. By this construction and connection of the dumping mechanism I provide a means for

employing the motive power of the machine for dumping the rake, and for holding the teeth elevated or depressed, and also a means for assisting or controlling this power either by the foot or hand of the driver. When the power is applied from the horse, or by the hand-lever or by the foot-lever, the other parts necessarily perform their respective motions automatically, but without impeding the action of the operative instrumentality. In like manner the power may be applied through any two of the instrumentalities—namely, the lever L, the lever W, and draft mechanism E R—in concert, or through all three in concert. If it is desired to raise the teeth quickly to clear an obstruction, the power may best be applied through the hand-lever. Obviously, the construction and configuration of the lever *g* may be varied, and the horn Z be extended from the lower side of the thimble-rod backward and upward, or the link may be attached to the lever *g* adjustably in various other well-known ways to accomplish the desired results without departing from the spirit of my invention. Obviously, also, the foot-lever may be modified, as shown in Fig. 5, having the supporting-arm *x* on the other side, and mounted in any suitable bearings fastened to the cross-piece C. By mounting the foot-lever and the hand-lever on opposite sides of the cross-bar the driver can readily slip his foot from the foot-lever to the lower part of the hand-lever, forward of the fulcrum, and assist with his foot to hold the teeth down, or vice versa. The draft-link may be fastened to the foot-lever on either side, as shown in Fig. 1, or as in the other figures. The shoulder device on the rear of the lever *g*, connecting it to the lifting-bar Q, serves to maintain said lever against any lateral sag or wrenching arising from the different kinds of work the bar Q is required to perform in dumping the hay accumulated in the teeth more heavily in one place than in another, or arising from the application of power through the levers to lift said lever *g*. When it is desired to dump the rake, ordinarily the hand or foot lever is operated to lift the rear arm of the lever *g*, so as to raise the rear of the draft-link above the fulcrum or out of its dead-lock with the fulcrum, and the animal then moves forward in the thills, drawing forward the whiffletree and the draft-link, and so exerting pressure on the lever *g* to raise it and the bar Q, and teeth with it. Since the draft-link is attached to the lever *g* very near the fulcrum or center of motion, the distance through which it has to advance in order to raise the lever is very short, so the animal can readily move forward in the shafts the required distance without hindrance from or unusual wear to the harness, and without the traces becoming slack when the machine is rapidly operated by means of the long lever L. During the operation of dumping, the wheels are momentarily at rest over the windrow, though the horse is constantly advancing, and when the teeth drop back,



either from their own weight or with the aid of the hand-lever, the wheels and teeth-head are by this operation drawn forward toward the horse, so that the teeth clear the windrow and promptly resume raking. By these instrumentalities and devices the efficacy and ease with which the rake can be operated are materially increased without impairing the necessary substantial character of the various parts.

The mode of operation of my improvements and the advantages attained by the organization of the mechanism will be obvious to those skilled in the art from the foregoing description without further explanation.

I do not broadly claim hay-rakes of the class in which the teeth are lifted by levers to discharge the hay, but limit my claims to the organization of instrumentalities substantially such as herein set forth.

I am aware that a patent dated May 23, 1876,

Reissue No. 8,279, dated June 11, 1878, was granted to James H. Melick, in which the horse assisted in raising the teeth, and I do not claim such device; but

I claim as of my invention—

1. In a horse-rake, the combination of a draft-link, R, with the lifting-lever *g*, provided with a prong, Z, having holes or equivalent means for regulating the leverage of the draft-link, substantially as described.

2. In a hay-rake, the combination of a draft-link, R, with the lifting-lever *g*, provided with a downwardly-projecting prong, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES LA DOW.

Witnesses:

B. I. STANTON,

WM. W. DIAMOND.