(No Model.) 2 Sheets—Sheet 1.

P. A. SPICER.

HAY TEDDER.

No. 350,566. Patented Oct. 12, 1886.

Fig. 1

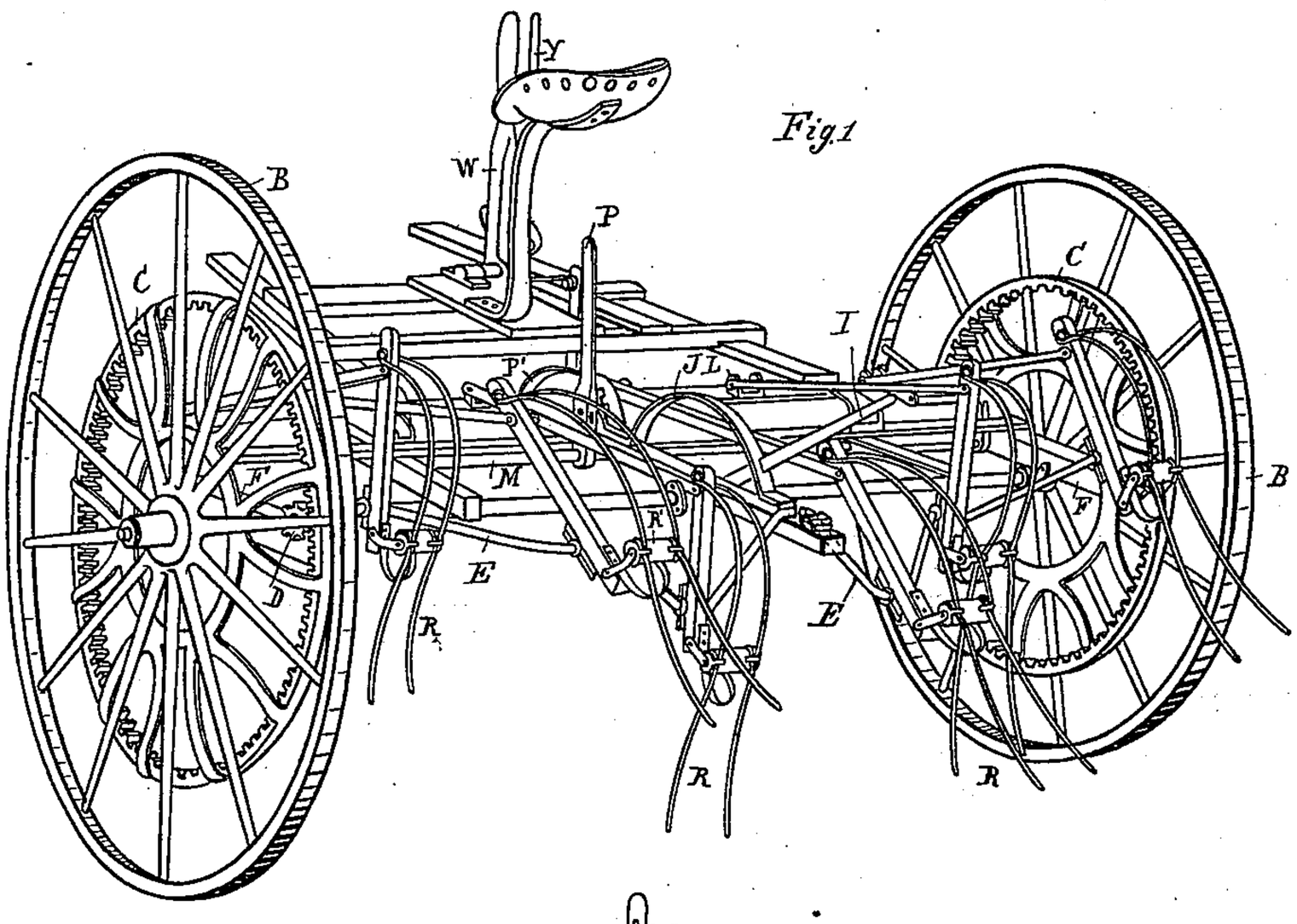


Fig. 3

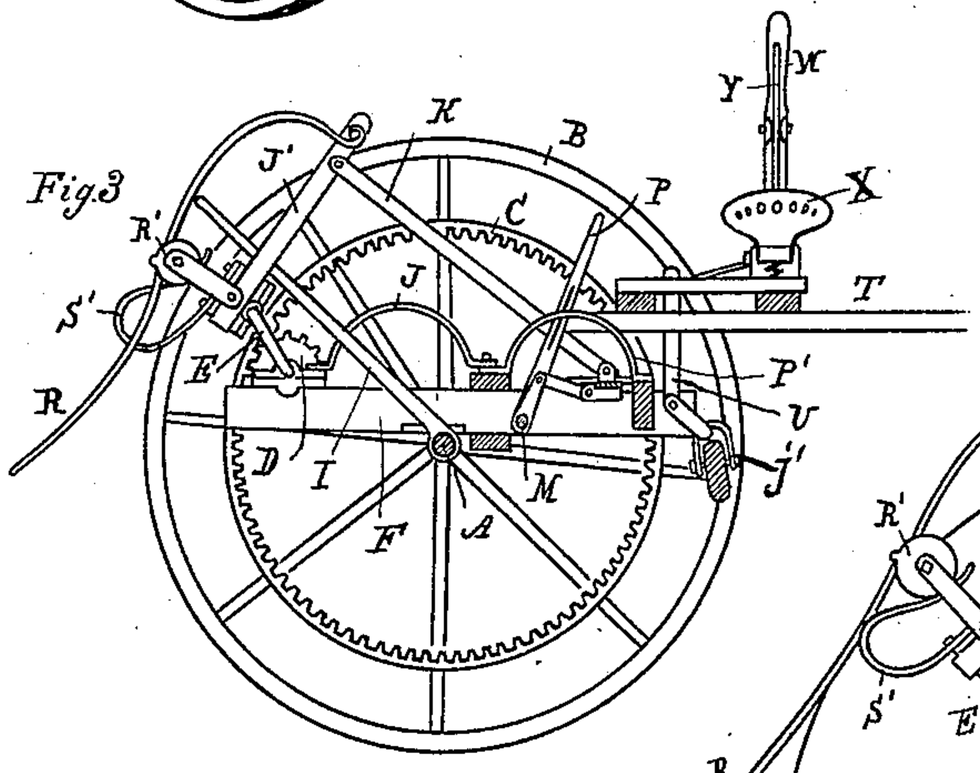
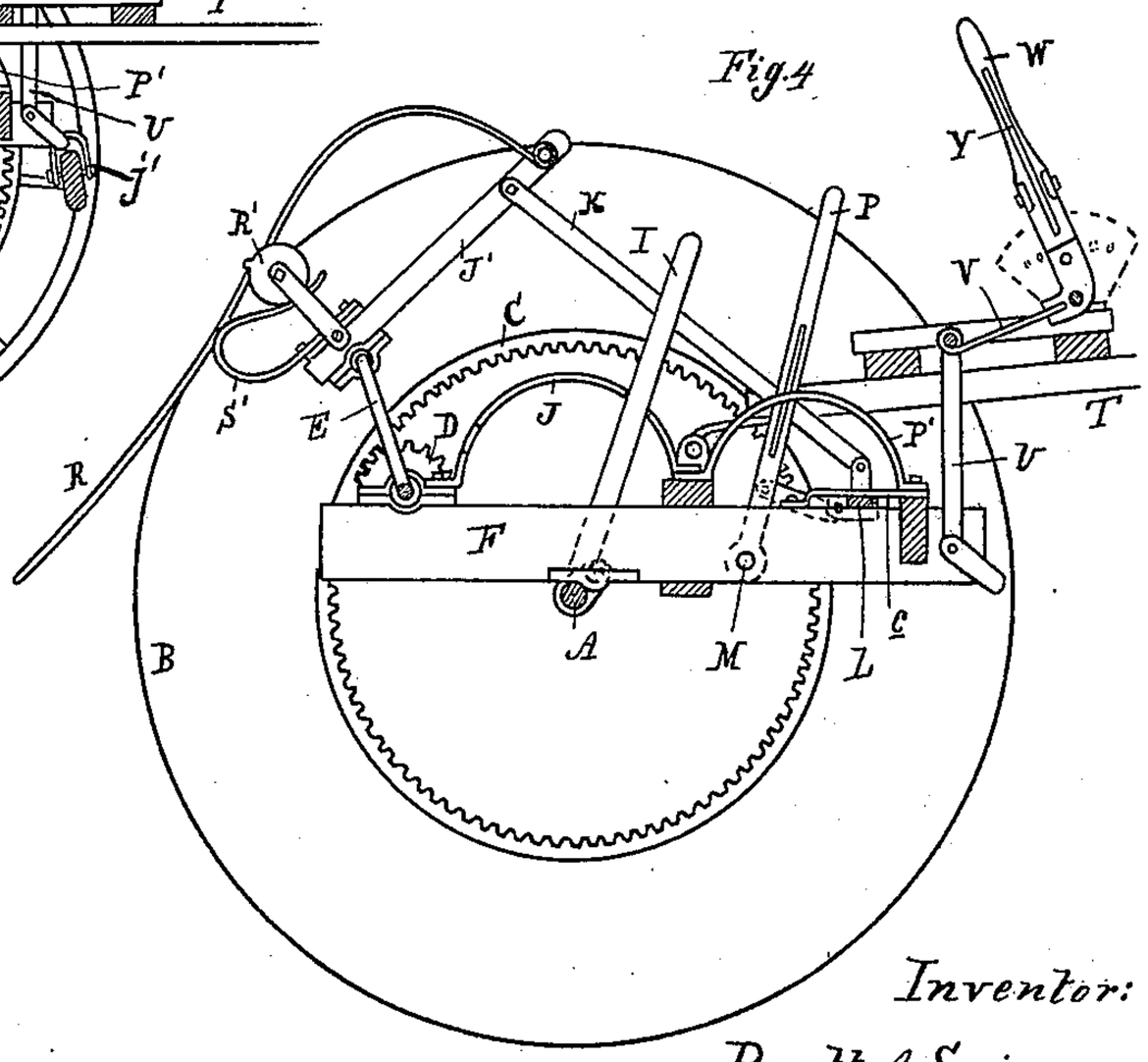


Fig. 4



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N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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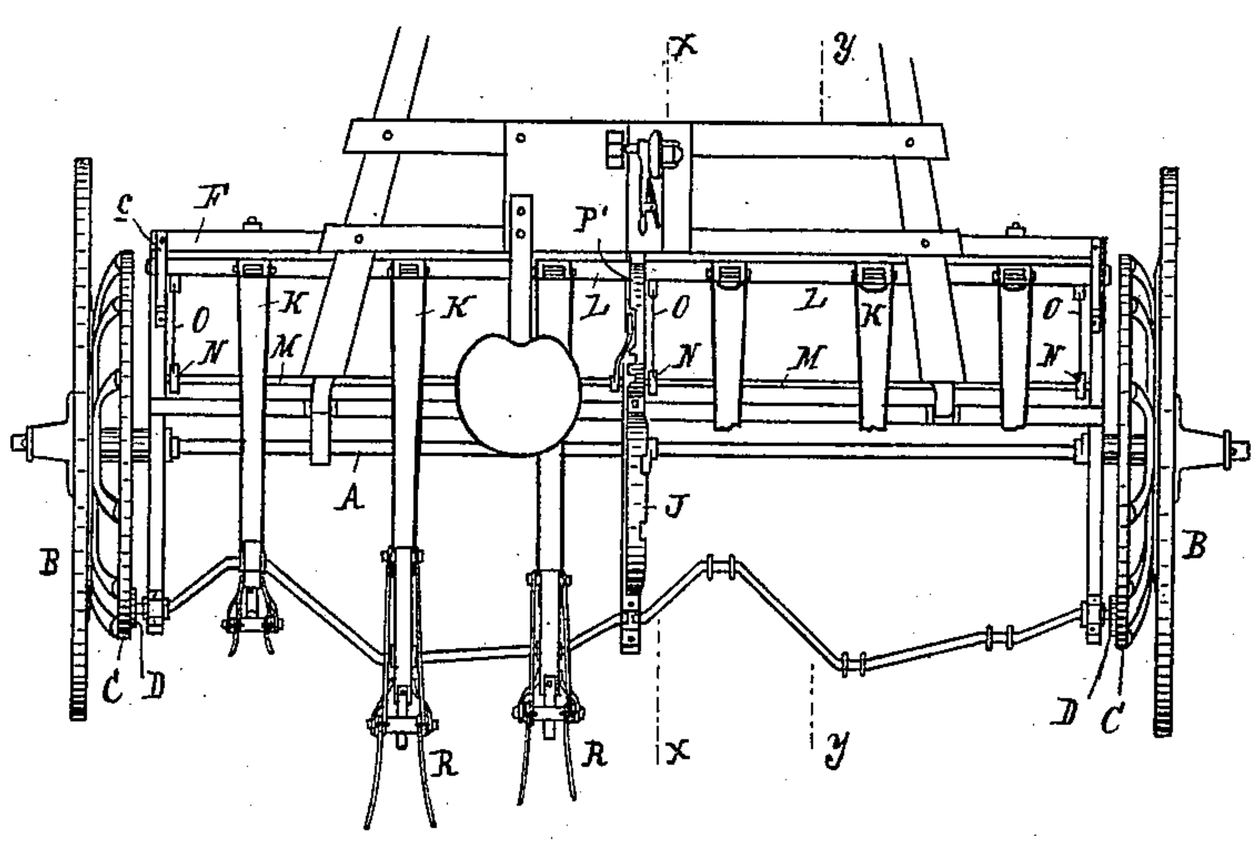

Fig. 2

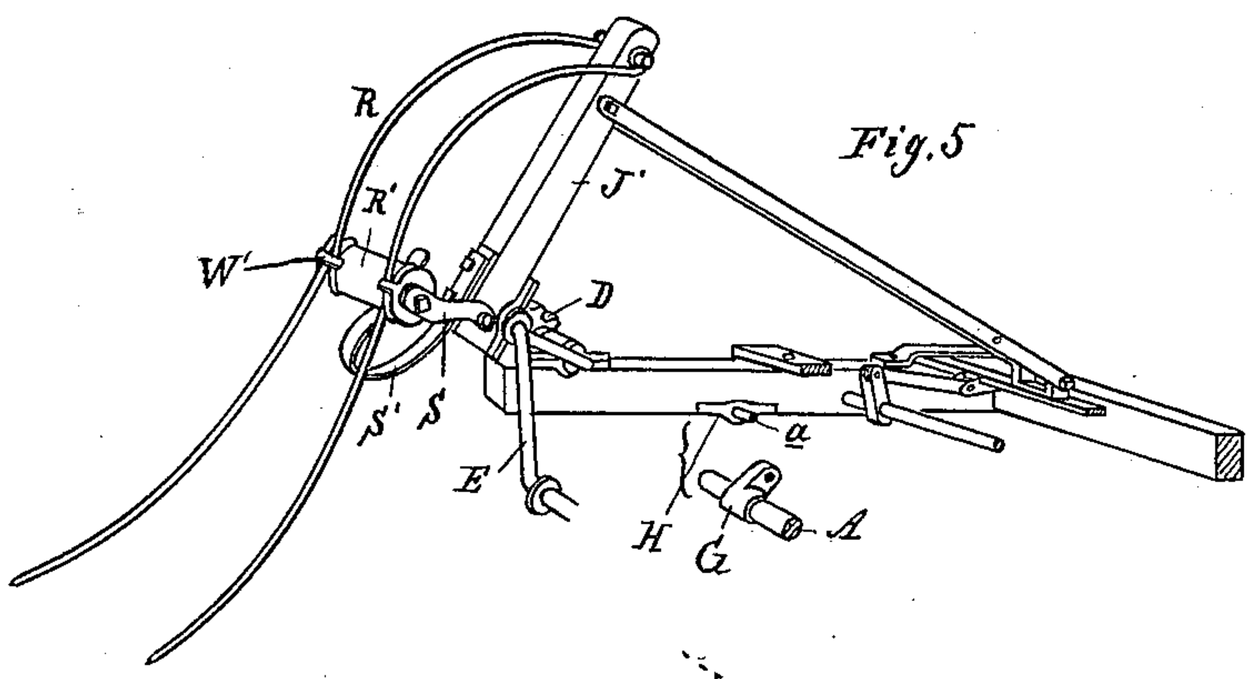

Fig. 5

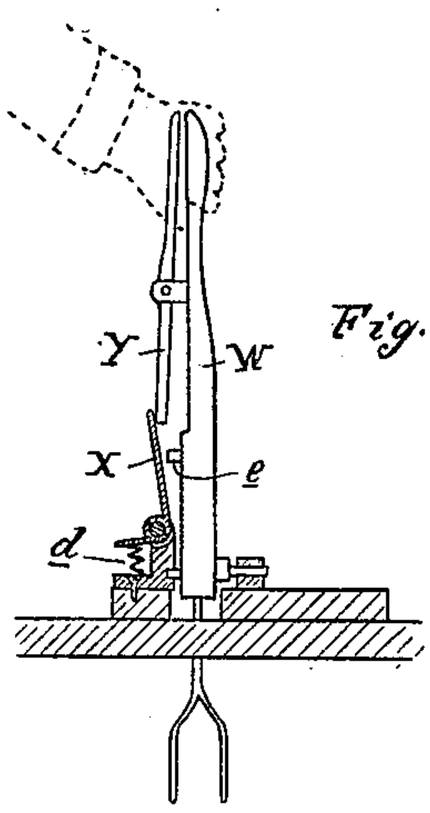

Fig. 6

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UNITED STATES PATENT OFFICE.

PRATT A. SPICER, OF MARSHALL, MICHIGAN.

HAY-TEDDER.

SPECIFICATION forming part of Letters Patent No. 350,566, dated October 12, 1886.

Application filed September 16, 1885. Serial No. 177,265. (No model.)

To all whom it may concern:

Be it known that I, PRATT A. SPICER, of Marshall, in the county of Calhoun and State of Michigan, have invented new and useful Improvements in Hay-Tedders; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in the construction of hay-tedders.

The invention consists in the construction of and means employed for regulating the lift or stroke of the forks; in the construction of the forks and their connections; in the peculiar construction of the lever for regulating the position of the frame, and in the peculiar construction, arrangement, and combination of parts, all as hereinafter fully set forth.

Figure 1 is a perspective view of my improved tedder. Fig. 2 is a plan view of the same. Fig. 3 is a vertical section showing the engagement of the driving mechanism. Fig. 4 is similar view with parts disengaged. Fig. 5 is a detached perspective view of one of the forks and its connections. Fig. 6 is a sectional elevation of the lever device for raising and lowering the frame.

In the accompanying drawings, which form a part of this specification, A represents the axle, upon which are mounted the rotating traction-wheels B, each of which is provided with an internal gear-wheel, C, designed to engage with a pinion, D, upon the outer ends of the crank-shafts E, which are journaled in proper bearings in the rearwardly-projecting bars of the frame F.

The axle A, near its outer ends, and preferably just within the side bars of the frame, is supported by the arms G, which latter are hung upon pins *a*, which project inwardly from bearing-plates H, secured rigidly to the side bars of the frame, as shown in Figs. 3, 4, and 5. The bottom face (immediately below these pins) of the bearing-plates H is convex in form, as shown. Swinging supports for the axle may be provided, if desired, at any intermediate points between the ends, although an ordinary swinging bracket or hanger at each end of the axle will answer the purpose. About mid-length of the axle, or at a point convenient to the driver, there is secured a lever, I, which is designed to engage with the notched quadrant or arch J, rising from the frame in such manner that as this lever is moved forward the axle will be projected to the rear, carrying with it its drive-wheels and gear, disengaging the same from the pinion D upon the crank-shaft, while the weight of the machine rests upon the top of the axle, bearing on the bearing-plates H immediately in rear of their convex faces. A reverse movement of the lever causes the axle to move forward to the opposite side of the convex bearing-plates, and compels an engagement between the gears of the driving mechanism, as is clearly shown in Figs. 3 and 4.

J′ represents the fork handles or stales, which are properly journaled upon the cranks of the crank-shaft E, to the upper ends of which are pivotally secured the rear ends of the radius-bars K, the opposite ends of such radius-bars being pivotally secured or hinged to a plate, L, the ends of which rest and slide upon the longitudinal bars of the frame beneath guide-plates *c*, each plate having secured to it the radius-bars of the forks that are secured upon its corresponding section of crank-shaft, (the number shown in the drawings being three,) and and as the crank-shaft consists of two sections, each being driven independently of the other, it necessarily follows that both sides or sections of the machine must be constructed alike.

M is a rock-shaft journaled in proper bearings in the frame, and has secured to it two or more crank-arms, N, which are connected by means of links O to the plates L, and this rock-shaft is also provided with a lever, P, designed to engage with a toothed rack, P′. The lever P coming up within easy reach of the driver, it can be operated by him for controlling or operating and regulating the lift, stroke, or kick of the tedder-forks—as, for instance, if the grass being operated upon is light, it does not require as much force to "kick" or shake it out loosely as if it were heavy; hence, when tedding light grass, or grass which has been gone over with the tedder and made partly into hay, the operator moves the lever P rearward, which draws the plate L rearward, and necessarily thereby throws rearward the upper ends of the fork-stales, so that the lower ends of the forks are thrown well forward, and

the movement made stirs up the hay or grass lightly instead of throwing it high in the air. If the grass is heavy a reverse motion is given to the lever, which necessarily draws the upper ends of the fork-stales forward and raises the points of their respective forks, so that in discharging or "kicking" the hay or grass is thrown higher into the air, and is separated and spread.

R represents the spring-forks, the upper ends of which are secured to the fork-stales J′, from whence they pass in a curve to and around the spools R′, and thence in a reverse curve and spreading to their ends, as shown. These spools R′ are pivotally secured between the upper ends of the radial links S, the opposite ends of which are pivotally secured to the lower ends of the fork-stales. A spiral spring, or one like S′, C-shaped, may be secured to the fork-stales, the free end of such spring being beneath the spools R′.

In operation, when the tedder is passing over uneven ground, stumps, stones, or other obstructions which are sometimes found in the way and are liable to break the forks, the radial links S, turning upon their pivotal points in the fork-stales, admit of the necessary flexibility of the forks under great pressure, while as the forks recover their normal positions, such radial arms control to a certain extent the spring of the forks until they are arrested by the impact of the spools R′ upon the check-springs S′; or, if no check-spring is used, the reverse spring motion of the forks will put them in position.

T represents the shafts, and T′ a clevis to which the drawing force is attached, such shafts being pivotally secured to the frame in the ordinary manner. To the front bar of the frame F, and at about its longitudinal center, there is pivotally secured a link, U, the upper end of which is pivotally secured to a spring-bar, V, the opposite end of said bar being secured to a lever, W, the lower end of which is fulcrumed in proper bearings upon the frame of the shafts. Upon one side of this lever W, at its lower end, is pivotally secured in proper bearings a spring latch-plate, X, in the form of a bell-crank lever, the larger and vertical arm of which being substantially of the form shown in Fig. 3, while beneath its shorter and horizontal arm is placed a spring, *d*. The vertical portion of this bell-crank lever is provided with a series of holes, Fig. 3, with which the pin *e*, projecting from the side of the lever W, is designed to engage as such lever is adjusted by the operator.

Pivotally secured to the lever W is a lever, Y, the lower end of which lies between the latch-plate X and the lever W. When the operator desires to change the position of the frame, he grasps the upper ends of the levers W and Y in his hand, compressing the lever Y against the lever W, thus projecting the lower end of the lever Y and forcing the latch-plate out of engagement with the pin *e*, when he moves the lever in the proper direction to raise or lower the frame, and releases the lever Y, when the latch-plate re-engages with the pin of the lever W. By this construction the frame can readily be tilted upon the axle, so as to regulate the height of the forks from the ground as may be desired.

The spring-bar V, forming the connection between the link U and lever W, is for the purpose of allowing the frame F to have a limited amount of elasticity or give, to avoid springing the crank-shaft, as might occur in passing over obstructions or uneven ground with which the forks come in contact. The tendency in such cases is to elevate the rear end of the frame and spring the crank-shaft; but this is obviated by providing a flexible connection at the front of the frame, which is depressed as the rear end is elevated under such conditions. The forks, being supported by the radial links S, are practically rigidly supported under all the ordinary conditions of "tedding;" but when the forks come in contact with an obstruction of any size, and are called upon to sustain labor greater than that of tedding, the forks can readily recoil or recede from the obstruction by forcing the links back toward the fork-stales.

If desired, stops W′ may be secured at the ends of the spools R′, that will extend over the laps of the forks at that point, so as to prevent the forks from uncoiling in their reaction.

I deem it important that the forks be arranged in groups, each group independent of the other, thus permitting the turning of a corner without danger of twisting or breaking the machine, the group of forks farthest from the wheel upon which the machine is turning continuing to work, while the other group will remain inoperative, as will be readily understood.

What I claim as my invention is—

1. In a hay-tedder, the combination of the forks arranged in groups, a sliding bar for each group, and radius-bars pivotally secured to the stales of the forks and to the said sliding bars, with the means, substantially as described, for simultaneously adjusting said bars for regulating the lift or stroke of the tedder-forks, substantially as described.

2. In a hay-tedder, the combination of the forks R and their stales, said forks being arranged in groups, and each group carried by an independent crank-shaft, with the sliding bars L, one for each group of forks, the radius-bars K, pivotally connected with said bars and stales, and means, substantially as described, for simultaneously adjusting said bars for regulating the lift or stroke of the tedder-forks, as set forth.

3. In a hay-tedder, the combination of the fork-stales J′, forks R, and radial links S, substantially as and for the purposes set forth.

4. In a hay-tedder, the combination of the fork-stales J′, forks R, radial links S, and

spools R′, substantially as and for the purposes set forth.

5. In a hay-tedder, the combination of the fork-stales J′, forks R, radial links S, spools R′, and check-spring S′, substantially as and for the purpose described.

6. In a hay-tedder, the combination, with the frame F and its accessories and the thill-frame, of the levers W Y, the former of which is pivoted to one of said frames and connected to the other, provided with a pin, *e*, and the spring-latch plate X, provided with a series of holes adapted to engage with such pin *e* and retain its lever in its adjusted position, substantially as specified.

7. In a hay-tedder, the combination, with the radial links S, spool R′, and fork R, of the stop W′ on said spool, substantially as and for the purpose specified.

PRATT A. SPICER.

Witnesses:
H. S. SPRAUGE,
E. SCULLY.