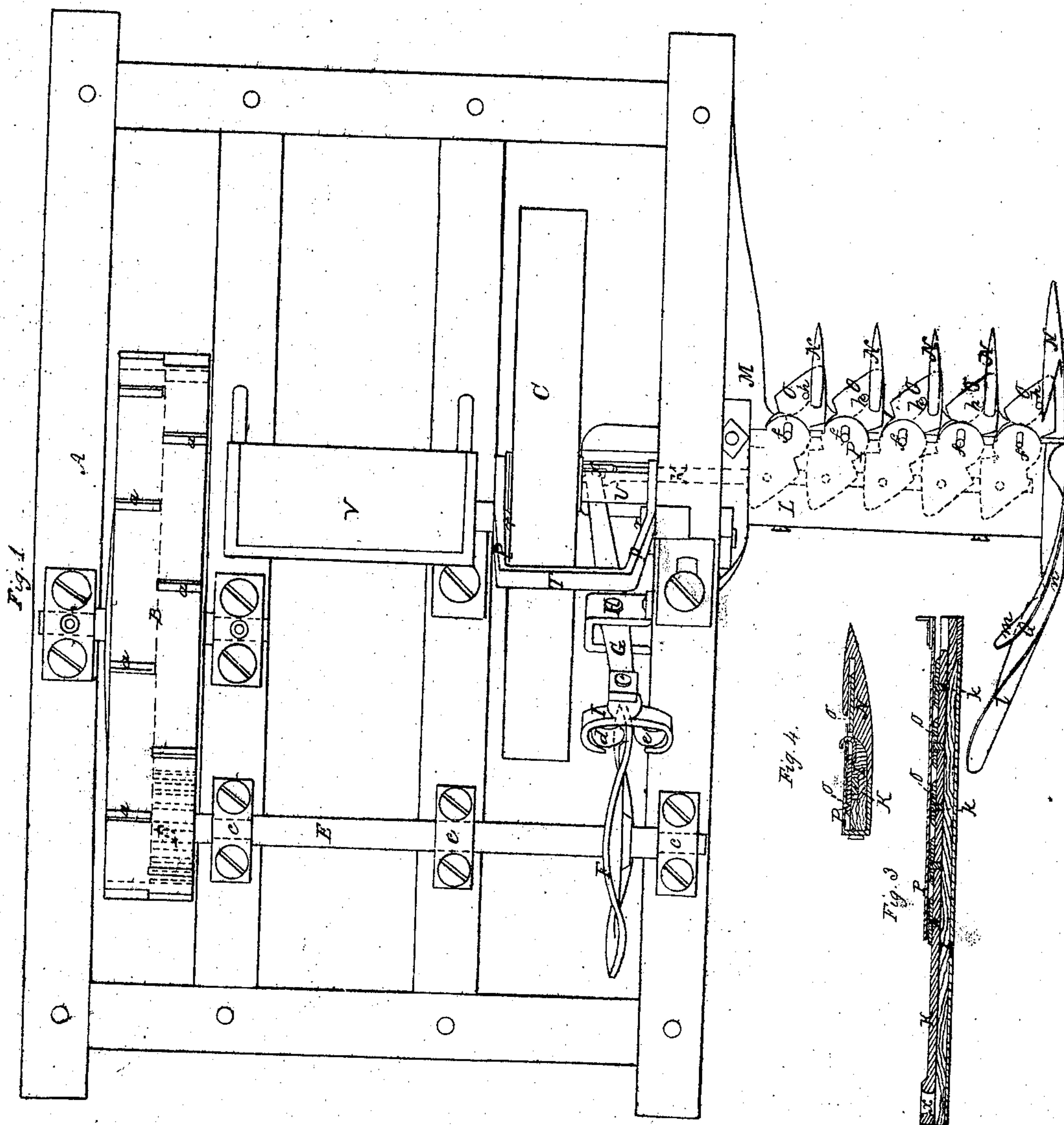


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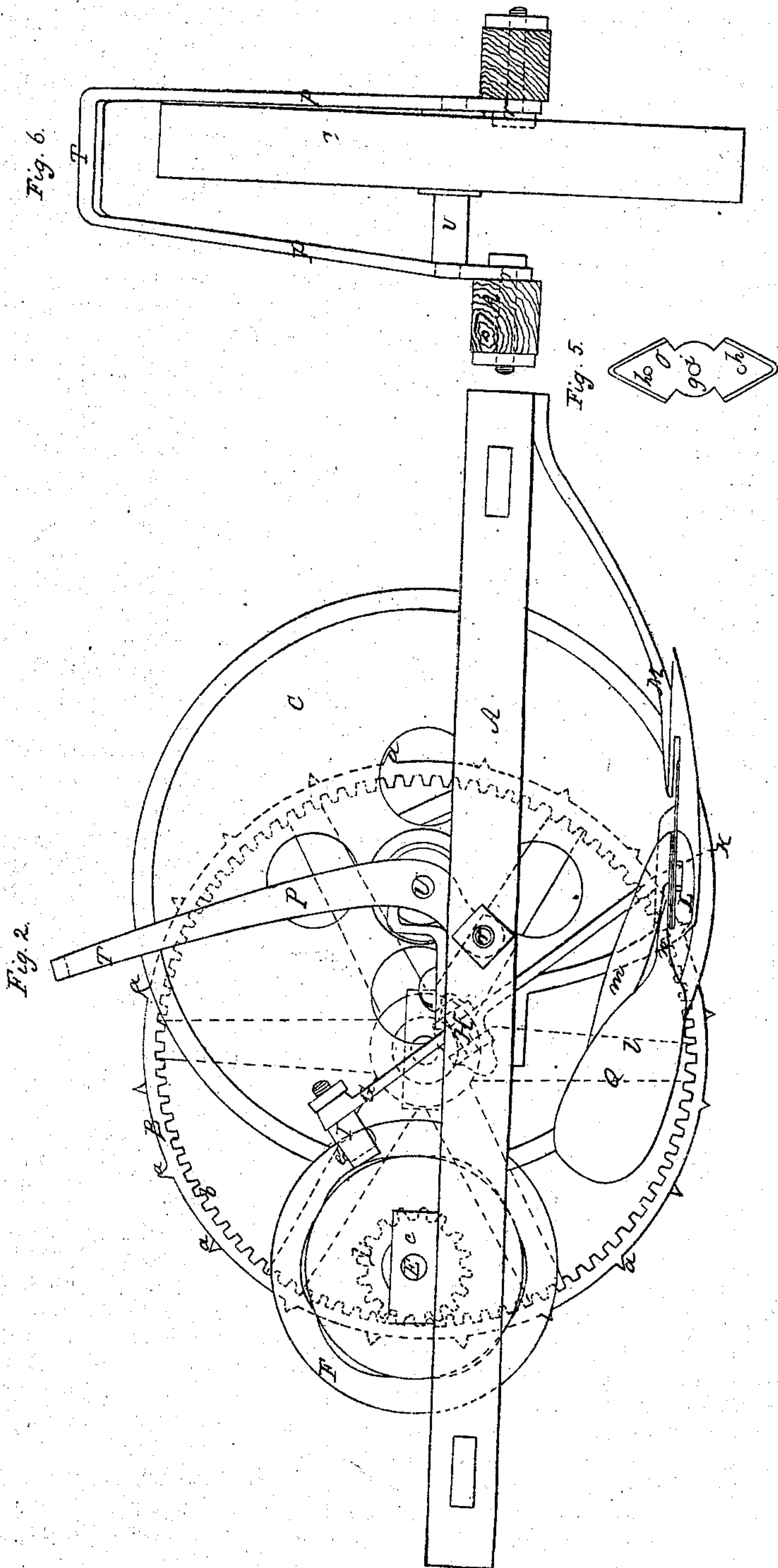
Patented Mar. 20, 1855.



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UNITED STATES PATENT OFFICE.

FISK RUSSELL, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MOWING-MACHINES.

Specification forming part of Letters Patent No. 12,559, dated March 20, 1855.

To all whom it may concern:

Be it known that I, FISK RUSSELL, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Machine for Mowing Grass; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, letters, figures, and references thereof.

In said drawings, Figure 1 denotes a top view of my said machine. Fig. 2 is a side elevation, taken on that side on which the cutter-bar is situated. Fig. 3 is a longitudinal section of the knife or cutter bar, and exhibits the arrangement of the knives and the manner in which they are applied to said bar. Fig. 4 is a transverse section of the cutter-bar and one of its cutters, the same being made to exhibit a sectional view of one of the guard-teeth. Fig. 5 is a top view of one of the knives as separated from the machine. Fig. 6 is an edge view of the secondary supporting-wheel and its sustaining-lever, said figure exhibiting the manner in which such lever is applied to the main frame of the machine.

In these drawings, A represents a carriage or main rectangular frame supported on two wheels, B C, the former being a driving as well as a supporting wheel—that is to say, its periphery is armed with a series of projections or teeth, *a a*, extended from it, as in the wheels of other mowing-machines. This wheel carries on the inner surface of its rim an internal gear, *b*, into which a pinion, D, affixed to one end of a driving-shaft, E, is made to engage, the said pinion being denoted in Figs. 1 and 2 of the drawings by dotted lines. This driving-shaft extends across the frame, and is supported in boxes, as seen at *c c c*, and carries a cam-wheel, F. The axis of the secondary wheel, C, is not disposed in line with that of the primary wheel, B, but is arranged in front of it, and so that the secondary wheel shall be disposed entirely on one side of the driving or cam shaft, it being understood that the two wheels are made of the same or about the same diameter. The cam-wheel F is so formed as to impart a reciprocating vibratory movement to an inclined lever, G, which works on a fulcrum at H. The said lever carries a bifurcated rocker-frame, I, that is made to turn in one end of it and embrace the serpentine edge of the cam-wheel and support two friction-rollers, *d e*,

placed on opposite sides of and against the cam-wheel. By means of the rocker-frame the cam-wheel is enabled to operate the lever to much better advantage and with less noise and friction than would be the case were the lever applied to the cam by a stationary fork or its equivalent. Besides this, another advantage results from the peculiar application or use of a rocker-frame, the same being that it accommodates itself to the curves of the cam, and so as to prevent improper lateral strain on the lever. The lower end of the lever G extends into a mortise, *x*, made in a long slide bar, K, which is supported so as to slide in the cutter-bar L, that is fastened to and extends from a holdfast, M, and near to the lower part of the wheel C, as seen in the drawings. The particular arrangement of the cutter-bar and the wheel C in front of the driving-shaft and the driving-wheel, when said shaft and driving-wheel are arranged and connected by a pinion and an internal gear, as hereinbefore described, serve to lessen the side draft or lateral pressure on the horses or draft-animals in comparison to what said draft would be were the secondary wheel and the cutter-frame disposed back of the driving-shaft when arranged with respect to the driving-wheel, as specified. The said cutter-bar L has projected from it a series of guard or hooked teeth, as *N N N*, between each two of which a movable oscillating tooth, O, is made to play, the said tooth turning horizontally upon a center-pin or fulcrum. In the construction of these teeth they are formed triangular, or approximating thereto, in shape, and two of them are made to extend in opposite directions from one common center plate or bar, *g*, as seen in the drawings. Each of these teeth has a round hole, *h*, formed through it, each hole being at an equal distance from the hole *i* of the central plate. The lever-teeth so formed are arranged on the cutter-bar, as seen in the drawings, their central holes being supported on stationary fulera or pins *f f f*, while the back or rearmost holes are made respectively to receive pins *k k k*, extending upward from the slide-bar K. When the teeth are so arranged they may be covered by a cap-plate, P, made to extend partially over them, as seen in the drawings. By the reciprocating longitudinal movement of the slide-bar each of the cutting-teeth directly between each two of the guard-teeth will have imparted to it an

oscillating movement, such as will not only cause it to cut with a guard-tooth, like a common pair of scissors, but with a slight drawing stroke, such as will impart to it a great advantage in severing grass. Should any one of the teeth become dulled or injured, it may be removed from its fulcrum and turned around over the sliding bar, so as to bring its fellow tooth into its place. The fellow tooth having been placed under the cap-plate of the cutter-bar will have been protected from injury by such cap-plate.

The axle U of the wheel C is supported within and by the two arms *p p* of a forked lever, T, which is made to embrace the wheel, as seen in the drawings, and to turn at the lower end upon fulcra *r r*. By means of this lever, when a person is sitting upon the driver's seat V, the cutter frame or bar may be elevated or depressed, so as to raise it above the ground to such an extent as may be necessary either to clear a stone or other obstruction upon the surface of the ground or to cut the grass or stubble to such height as may be necessary. In order to accomplish this, he has only to take hold of the upper part of the lever with his right hand and turn said lever forward, so as to press the wheel C toward the ground, and thereby raise the frame of the machine and the cutters with respect thereto.

To the outer end of the cutter-bar I affix a raking-board, Q, and I construct such raking-board in the following manner, the object of it being to move the cut grass away from the standing grass. Such board is made in two independent parts, *l m*, each of which is affixed to the raking or cutting bar, the back board being applied thereto by a spring, *n*, which al-

lows it to play up and down and slide on the front board while the latter is stationary. As such raking-boards have heretofore been constructed under such an application, the horizontal and upright parts have been connected together and so hinged to the cutter-bar as to cause both to rise simultaneously when passing an obstruction. In my improved raking-board the upper portion or front part remains stationary while the other portion is movable, such a method of constructing a raking-board causing it to operate to much better advantage than when made in the other way, as above set forth.

What I claim is—

1. Arranging the secondary supporting-wheel and the cutter-frame in front of the driving-shaft, when such driving-shaft and the driving-wheel are arranged and connected by gears, as specified, the same serving to lessen the side draft or pressure on the horses or draft-animals in comparison to what it would be were the secondary wheel and the cutter-frame disposed back of the driving-shaft when arranged with respect to the driving-wheel, as specified.

2. The combination of two knives, so that they shall project in opposite directions from one center plate or bar, in order that either of the knives may be used in connection with the guard-teeth, and either be made to serve as a lever to the other whenever circumstances may require.

In testimony whereof I have hereto set my signature this 5th day of February, A. D. 1855.

FISSK RUSSELL.

Witnesses:

R. H. EDDY,
J. P. HALE, Jr.