

(No Model.)

2 Sheets—Sheet 1.

A. STEVENS.
MOWING MACHINE.

No. 461,854.

Patented Oct. 27, 1891.

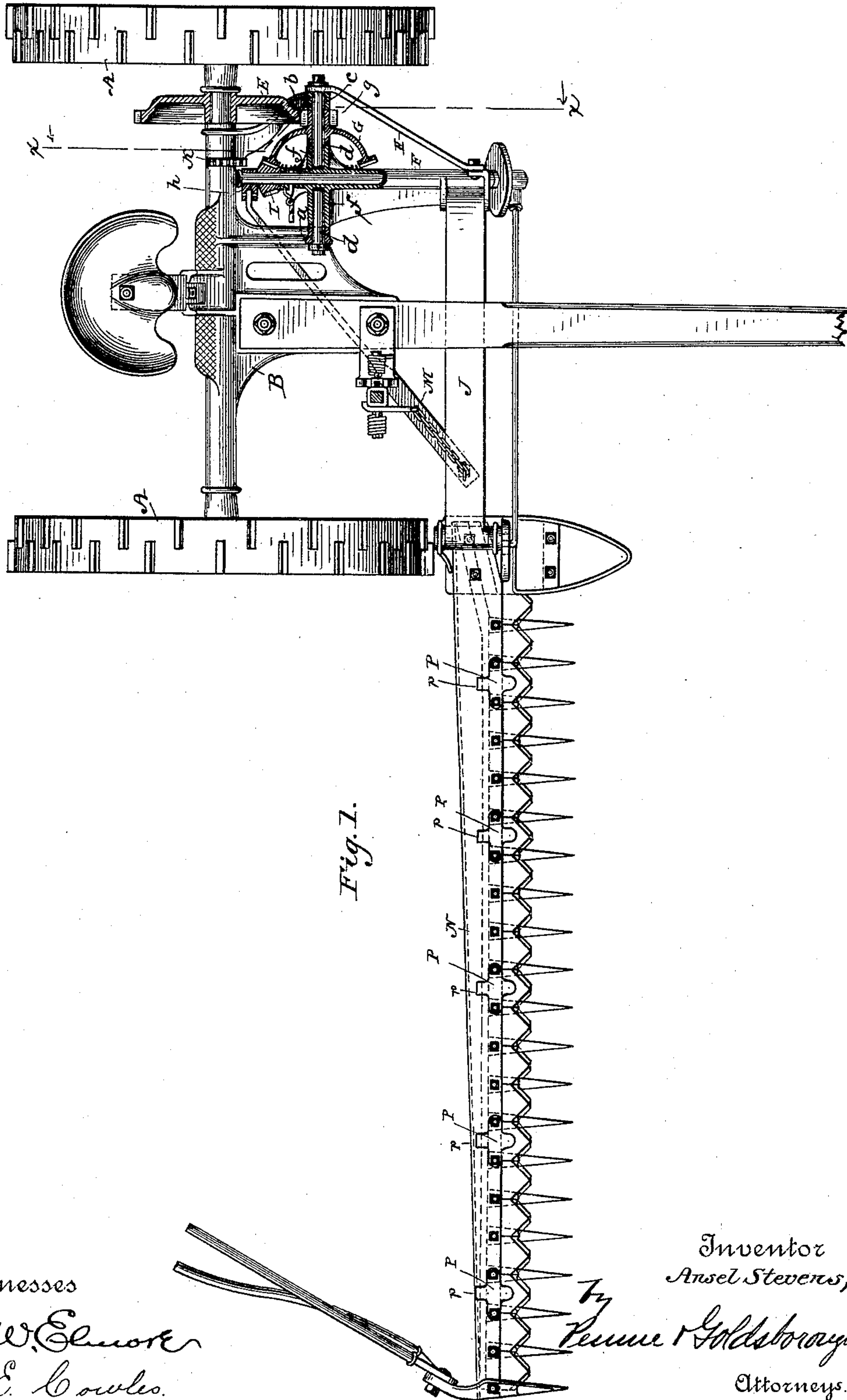


Fig. 1.

Witnesses

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C. E. Bowles.

Inventor
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Fig. 2.

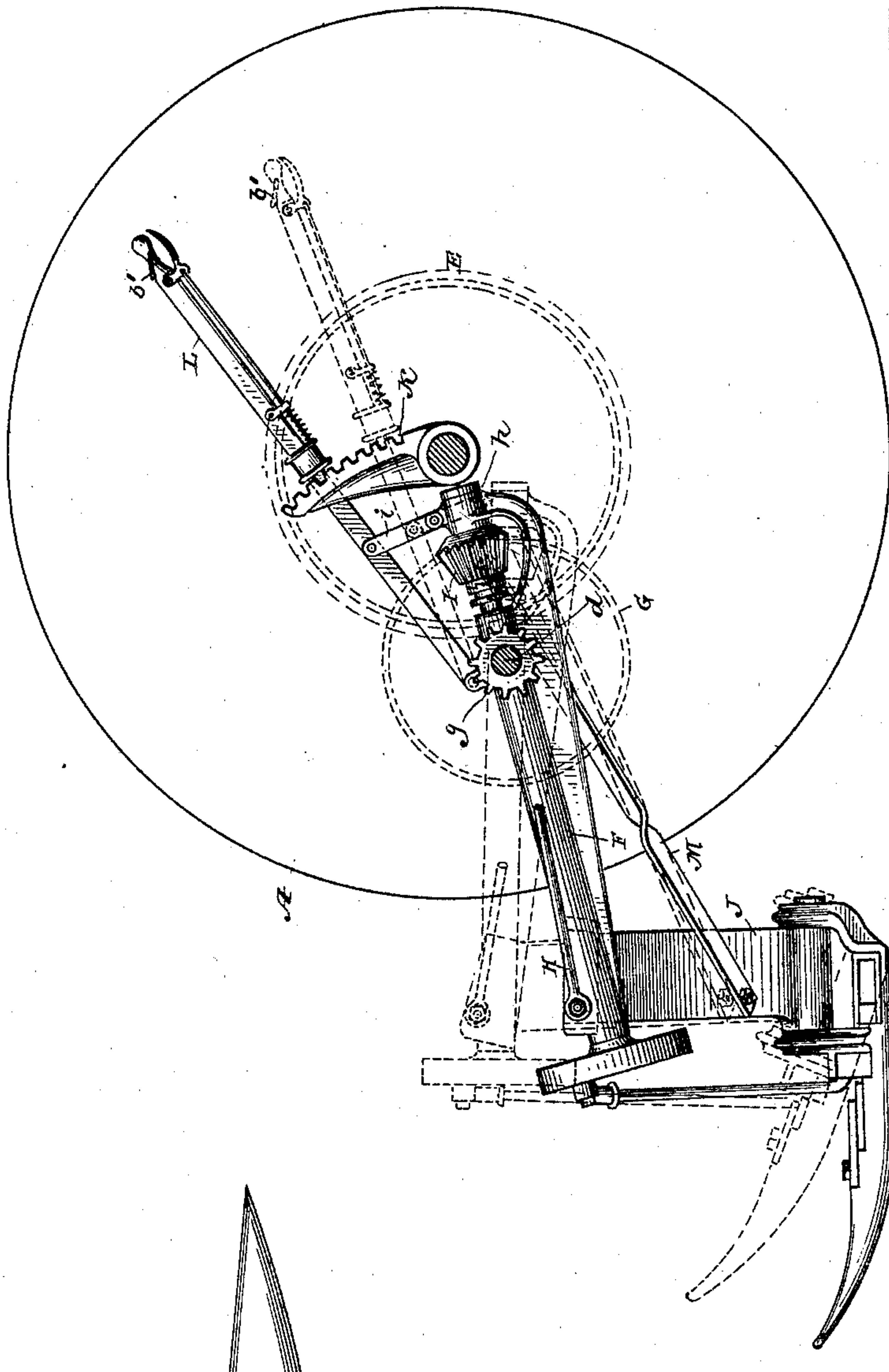
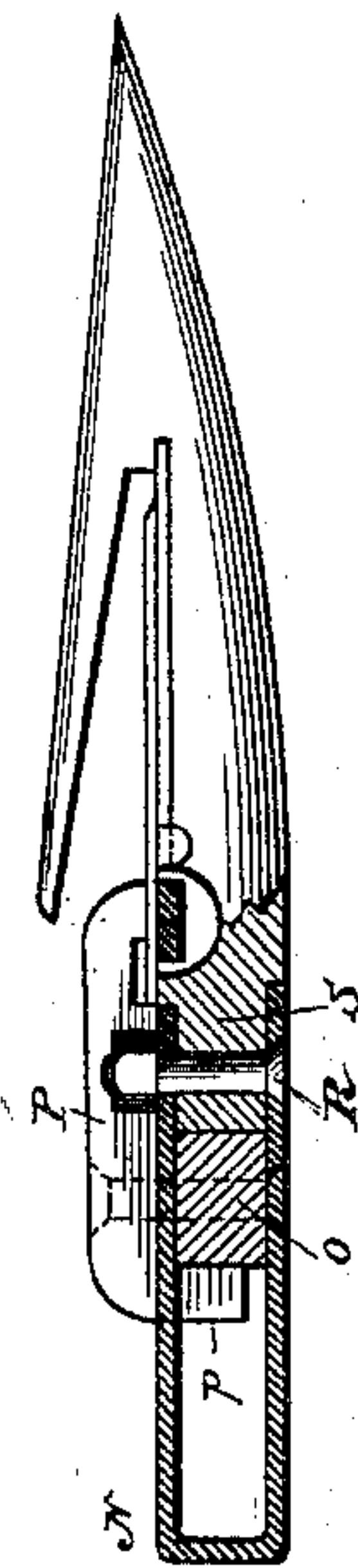


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

ANSEL STEVENS, OF GORHAM, ASSIGNOR OF ONE-HALF TO JOHN J. FRYE,
OF PORTLAND, MAINE.

MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 461,854, dated October 27, 1891.

Application filed April 10, 1890. Serial No. 347,352. (No model.)

To all whom it may concern:

Be it known that I, ANSEL STEVENS, a citizen of the United States, residing at Gorham, in the county of Cumberland and State of Maine, have invented certain new and useful Improvements in Mowing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to certain new and useful improvements in mowing-machines; and it relates more particularly, first, to the manner of mounting the coupling-frame, the crank-shaft, and cutter-driving gearing, so that the cutting apparatus may rise and fall without disarranging the relative positions of the parts, and, second, to the construction of the finger-bar, whereby greater strength and stiffness in proportion to the weight are secured than in any of the frames heretofore used.

The accompanying drawings show the invention as applied to a two-wheel front-cut mower, and the description is also confined to that form; but it will be readily understood by those skilled in the art that the improvements are also applicable to rear-cut machines, it being only necessary to arrange the parts in rear of the axle instead of in front, as here shown, their relation to each other remaining the same.

In the drawings, Figure 1 is a plan view, the gearing being sectioned. Fig. 2 is a section on the line *x x*. Fig. 3 is a cross-section of the finger-bar.

A A denote the supporting-wheels; B, the frame, supported from the axle by a tubular bearing-box integral with the frame; C, the tongue, rigid with the frame, and D the ordinary seat, the construction and arrangement of these parts being now well known and forming in themselves no part of my invention.

E is a constantly-driven gear-wheel on the axle, from which the crank-shaft and gearing are driven. The frame-casting on one side of the tongue is cut away, as shown, so as to form a yoke or fork consisting of the part *a* of the frame and the arm *b*, projecting forward from its stubble side and curved down-

ward and outward, crossing the plane of the gear E, and then upward, as shown, and having an eye or bearing *c*, in line with a similar bearing in the part *a* of the frame constituting the other arm of the fork. Into these two bearings are rigidly fixed stout stud-shafts *d*, projecting toward each other and constituting in effect one continuous axle or fulcrum-pin, for a purpose which will presently be explained.

F is the tubular crank-shaft housing. It is provided near its rear end with bearing-sleeves *f*, projecting laterally and diametrically from opposite sides. The stud-shafts *d* enter these bearing-sleeves, and the housing swings thereon in a vertical plane. Upon the outer one of the stud-axes, between the end of the sleeve *f* and the eye in the end of the arm *b* of the frame, is journaled the crown or dished bevel-wheel G, said wheel having on its hub the pinion *g*, meshing with the gear E on the axle.

H is a brace extending from the stud-axle on the stubble end outside of the arm *b* diagonally forward to near the front end of the housing. Within this housing is journaled the usual cutter-driving crank-shaft, having near its rear end the loose bevel-pinion I and on its front end a common crank-disk, which reciprocates the cutter by a pitman, as usual.

The hinge-bar or coupling-arm J is pivoted at its stubble end to the crank-shaft housing F near its front end in any suitable manner. As here shown, a pintle runs through an eye in the end of the bar and has its ends fastened in ears or lugs on the housing. The crank-shaft housing projects rearward beyond the stud-axes and terminates in a sleeve *h* just in front of the axle of the machine, so that it may clear the axle as it swings on its fulcrum on the stud-shafts.

M is a diagonal thrust-brace, which, with the coupling-arm J, constitutes the coupling-frame. This brace extends from the hinge-bar near the shoe backward to the rear end of the crank-shaft housing, where it is pivoted to a lug or lugs on the sleeve *h*, the pivot being in line with the pintle connecting the coupling-arm or hinge-bar with the front end of the housing, so that the cutting apparatus and its supporting-frame may be raised and

lowered in a manner and for a purpose well understood without binding or cramping of the parts.

Connected at its front end to the housing at a point as near as practicable to its fulcrum, where there is the least motion, is the hand-lever L, said lever extending back over the axle to within convenient reach of the driver in his seat. The lever is connected with the extreme rear end of the housing by a link *i*, (adjustable, if preferred,) connected to the sleeve *h*, the lever forming as thus connected, practically, an extension of the housing.

Rising from the frame-casting just over the axle is the rack-segment K, alongside of which plays the lever L and into which the usual hand-controlled spring-pawl with which the lever is provided engages, so as to lock the lever at different points when it is desired to fix and hold the cutting apparatus in any particular position. The hand-hold of the lever is provided with a small bail *b'*, as shown. This is for the purpose of holding the spring-pawl out of engagement with the rack, so as to allow the shoe and the cutting apparatus when the machine is in operation to rock and ride freely over the undulations of the ground. The bevel-pinion I on the crank-shaft meshes with and is constantly driven by the crown or dished wheel G, and is connected to or disconnected from the shaft at pleasure by a clutch, as shown. This clutch is of the ordinary form and is splined to slide on the shaft and revolve constantly therewith. It is controlled by a small foot-lever pivoted to a web or flange of the crank-shaft housing, as clearly shown in Fig. 1. As thus constructed and arranged it will be seen that the cutting apparatus is free to rise and fall on an axis in the line of draft, and also that it may rock or tilt freely on an axis at right angles thereto, so as to accommodate itself to the undulations of the soil, and that these rocking or rising-and-falling movements will in no way interfere with the free and easy working of the cutter. The axis of the crank-shaft housing being coincident with that of the gear which drives it, the relation of all the parts swinging on this axis is not disturbed by the movements of the cutting apparatus.

My improvements in the construction of the finger-bar will now be described. Instead of making this bar of flat pieces of rolled steel, I form it in the manner shown in the drawings, whereby I am enabled to use lighter stuff and produce a bar having much greater strength and stiffness in proportion to the weight than any heretofore known. The bar N is formed, preferably, out of a single sheet of steel bent or folded over into the form shown in Fig. 3, having an upper and lower horizontal flange joined at the back by a vertical part, making, practically, a hollow bar rectangular in cross section and open at the front to receive the shanks of the guard-fingers. To still further straighten this finger-

bar, I arrange on the inside, parallel with its front edge, a bar O, of steel or iron, and secure the same in place by means of the same clips P which are riveted on top of the bar and overhang the reciprocating cutter-bar, so as to hold it down to its work. These clips are shaped and constructed as shown in Figs. 1 and 3. They span the space between any two of the fingers, and are secured on top of the bar by the bolts or rivets which clamp the shanks of the fingers, passing also through their laterally-extending arms. The rear end of these clips is provided with a tail-piece *p*, which projects through an opening cut in the top flange of the finger-bar and sets in just behind the bar O, so as to form an abutment therefor and hold the same securely in place at the back. The guard-fingers are constructed with plain rectangular shanks *s*, adapted to fit in between the upper and lower flanges of the finger-bar. These shanks extend into the hollow bar and abut at their rear ends against the stiffening-bar O therein. The fingers are securely clamped in position by bolts and nuts passing through both flanges of the finger-bar and their shanks. The stiffening-bar is thus held in fixed position between the tail-pieces *p* of the clips and the shanks *s* of the fingers, and all the parts are rigidly secured together by the bolts and nuts. This, it will be understood, forms a light yet stiff, compact, and strong bar, adapted to withstand all lateral strains and particularly useful in that class of machines where the bar is floated or spring-supported at its heel end and which are designed to cut a wide swath.

I do not intend to be restricted to the precise details of the construction and arrangement of parts herein shown and described, nor to the use of all the parts in connection with each other, as it is obvious that these details may be varied without departing from the spirit of my invention, and that some of the features may be used without the others.

Having thus described the invention, what I claim, and desire to secure by Letters Patent, is—

1. In a mower, the combination of the axle, the frame forked, recessed, or cut away, as described, in front of the axle, the tongue rigidly connected to the frame, stud-shafts fixed on the frame parallel with and in front of the axle and projecting toward each other from opposite sides of the recess, a crank-shaft housing having tubular trunnions between its ends, by means of which it is pivoted on the stud-shafts, a crown or dished gear-wheel journaled on the shaft and driven directly by a gear on the axle, and a pinion on the crank-shaft in rear of the stud-shafts and driven by the dished gear, substantially as described.

2. In a mower, the combination of the axle, the frame forked, recessed, or cut away, as described, in front of the axle, the tongue rigidly connected to the frame, stud-shafts fixed on the frame parallel with and in front

of the axle and projecting toward each other from opposite sides of the recess, a crank-shaft housing pivoted on and swinging between the ends of the shafts, a hand-lever 5 connected directly with the housing, and a fixed segment-rack on the frame for rocking the housing on the stud-shafts and locking it in fixed position, substantially as described.

3. In a mower, the combination of the axle, 10 the frame forked, recessed, or cut away, as described, in front of the axle, the tongue rigidly connected to the frame, stud-shafts fixed on the frame parallel with and in front of the axle and projecting toward each other from 15 opposite sides of the recess, a crank-shaft housing pivoted on the stud-shafts by means of tubular trunnions between its ends, the hinge-bar, and the diagonal brace pivoted to the housing at the front and rear ends, respectively, on a line parallel with the shaft, 20 substantially as described.

4. In a mower, the combination of the axle, the frame forked, recessed, or cut away, as described, in front of the axle, the tongue 25 rigid with the frame, stud-shafts fixed on the frame parallel with and in front of the axle and projecting toward each other from opposite sides of the recess, a crank-shaft housing having tubular trunnions between its ends, 30 by means of which it is pivoted on the stud-shafts, so as to swing between their ends, a brace extending from the stubble end of the outer stud-shaft to the front end of the housing, the hinge-bar, and the diagonal thrust-bar pivotally connected with the housing at 35 its front and rear ends, respectively, a dished gear on the outer stud-shaft, driven by a gear on the axle, a pinion on the rear end of the

crank-shaft, engaging with the dished gear, and a lever to rock the housing on its fulcrum on the stud-shafts, so as to raise and lower the cutting apparatus, substantially as described. 40

5. A finger-bar for mowers and reapers, consisting of a metallic plate bent or folded upon 45 itself longitudinally, the guard-fingers having their shanks inserted into the open front edge of the bar, bolts or rivets passing through both fingers of the bar and the shanks of the fingers, and a stiffening-bar within the finger- 50 bar, said bar abutting against the rear ends of the finger-shanks and being held in place by removable lugs at the back, substantially as described.

6. The combination of the finger-bar formed 55 of a plate of metal folded upon itself longitudinally, as described, the guard-fingers having their shanks inserted in the open front edge of the bar, the separate strengthening-bar secured in place between the upper and 60 lower flanges of the finger-bar, the clip for holding the cutter-bar down to its seat, bolts or rivets passing through the arms of the clip and through the finger-bar and the shanks of the fingers, and a nib on the rear end of the 65 clip, extending through a hole in the upper flange of the finger-bar and fitting behind and holding in place the separate stiffening-bar, substantially as described.

In testimony whereof I affix my signature in 70 presence of two witnesses.

ANSEL STEVENS.

Witnesses:

H. B. ZEVELY,

J. A. GOLDSBOROUGH.