(No Model.) 2 Sheets—Sheet 1.

E. SMITH.

MOWING MACHINE.

No. 298,249. Patented May 6, 1884.

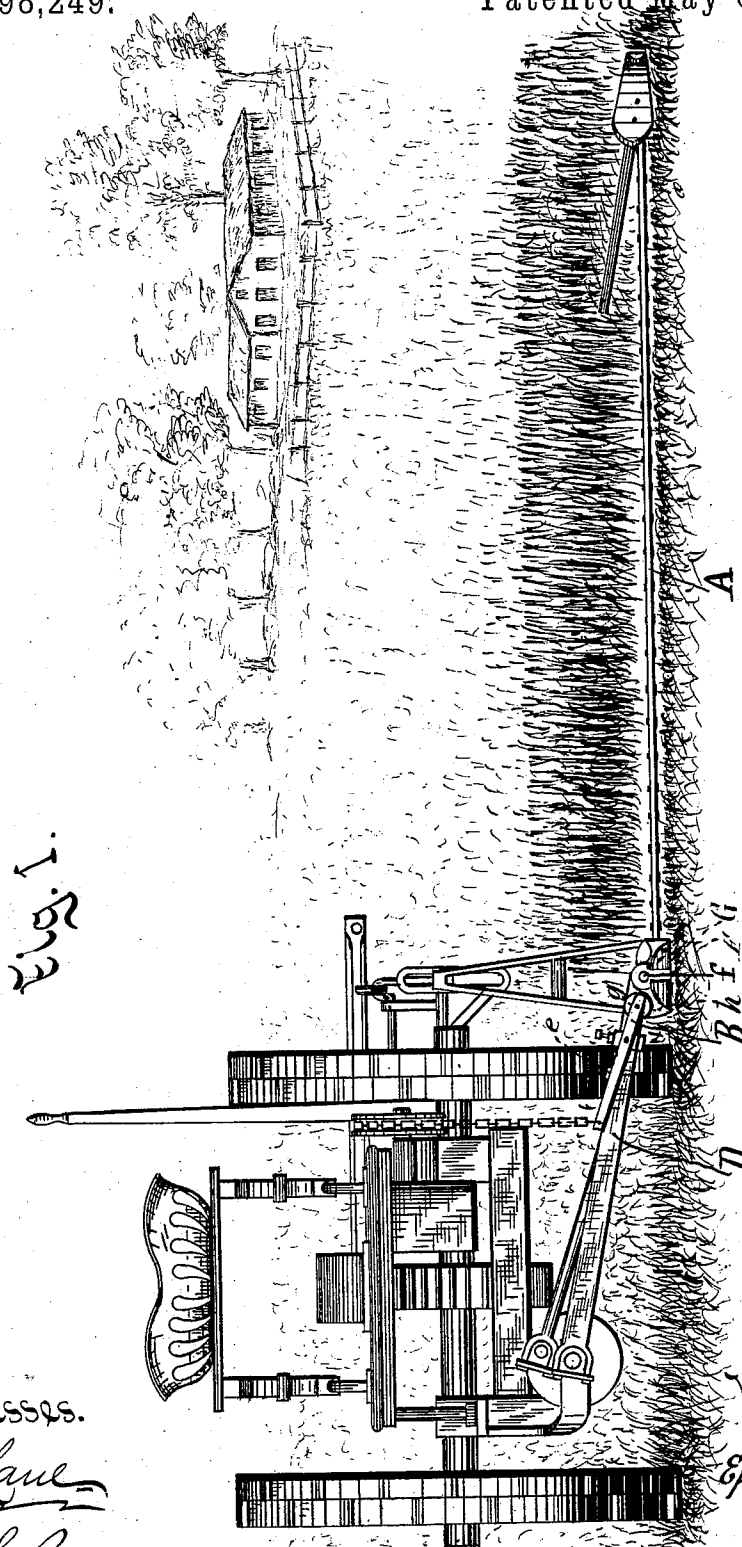


Fig. 1.

Witnesses.
F. W. Lane
A. S. Brown.

Inventor.
Ephraim Smith,
By his Attorney, J. B. Brown.

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

(No Model.) 2 Sheets—Sheet 2.

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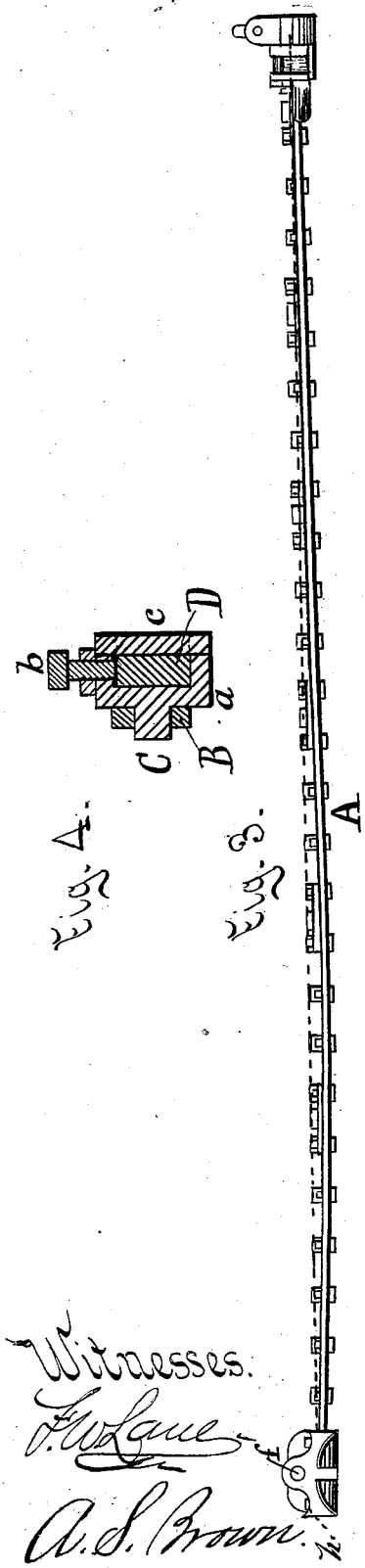


Fig. 4.

Fig. 3.

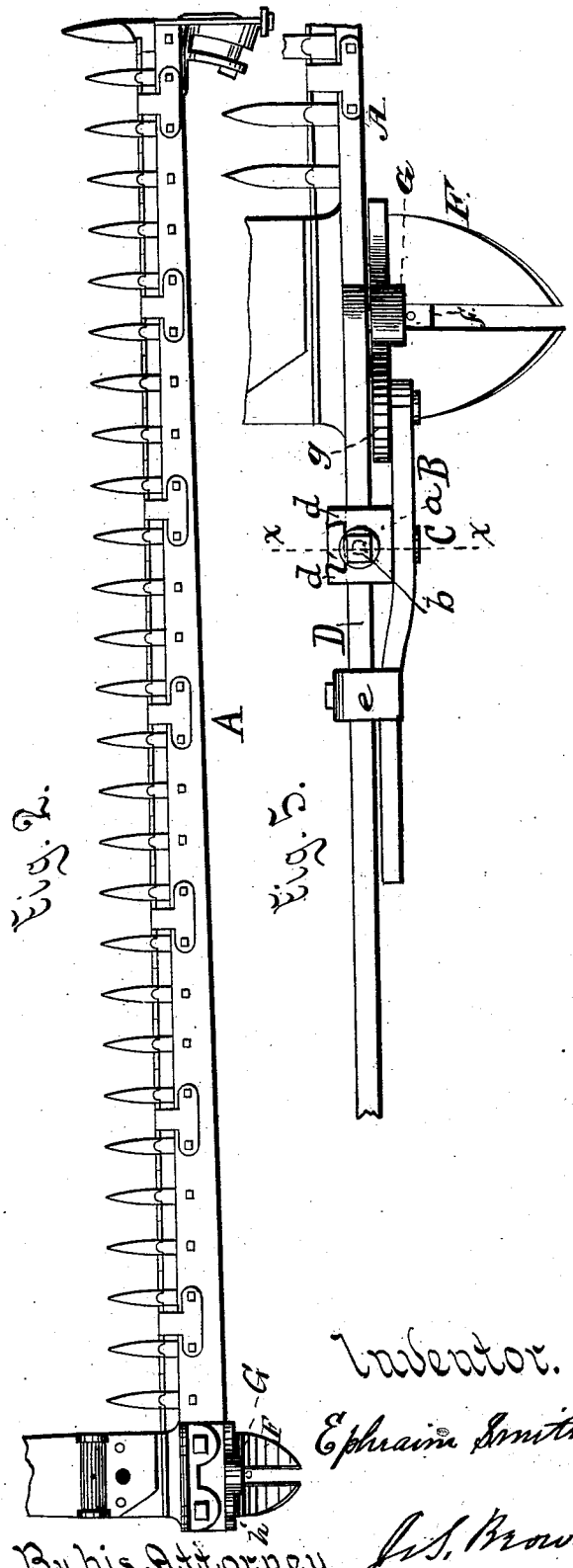


Fig. 2.

Fig. 1.

Witnesses.
F. W. Lane
A. S. Brown.

Inventor.
Ephraim Smith,
By his Attorney, Jas. S. Brown.

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

UNITED STATES PATENT OFFICE.

EPHRAIM SMITH, OF PITTSBURG, PENNSYLVANIA.

MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 298,249, dated May 6, 1884.

Application filed October 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, EPHRAIM SMITH, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain Improvements in Mowing-Machines; and I do hereby declare the following to be a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a rear view of the frame and principal parts of a mowing-machine provided with my improvements; Fig. 2, a top view, on a larger scale, of the improved finger-bar which constitutes a part of my invention; Fig. 3, a rear edge view of the finger-bar; Fig. 4, a cross-section of the coupling-arm and adjuncts in a plane indicated by the line *x x*, Fig. 5, showing another feature of my invention; and Fig. 5, a top view of a part of the coupling-arm and its adjuncts.

Like letters designate corresponding parts in all of the figures.

I have heretofore invented an improved mowing-machine including the features described and claimed in Letters Patent No. 233,035, granted to me October 5, 1880, and Letters Patent No. 251,479, granted to me December 27, 1881, whereby, among other advantages gained, I have been enabled to employ a finger-bar and cutter-bar of extraordinary length working very successfully; but in the use of a finger-bar of such great length a difficulty was encountered which has required much study and experiment to overcome. I have now successfully obviated the difficulty by means which I will proceed to describe as part of my present invention. The difficulty herein referred to arose from the springing and curving upward of the finger-bar in the middle by its own unsupported weight and that of the cutter-bar mounted thereon, so that the cutter-bar would bend downward at the outer end and not work freely in its guards or ways. Since no truck or caster-wheel on the outer end of the finger-bar could be successfully used with a spring-supported finger-bar such as set forth in the above-mentioned Letters Patent, means had to be devised in the construction of the finger-bar itself to overcome the difficulty. My invention for this purpose consists in making the finger-bar of a mowing or reaping machine with a slight downward curvature in the middle, thereby elevating it at the outer end, whenever it is not subjected to the depressing effect of its own weight by being supported at the inner end only, as when in operation. The amount or degree of downward middle curvature is sufficient to make the finger-bar straight when it is sustained at its inner end on a mowing-machine ready for operation. I have found that by making finger-bars of uniform width, taper, and thickness, and of a material of uniform quality, a very constant and definite curvature can be given to them, which, when the same are mounted for action, will, without fail, bring them practically straight. I will here indicate approximately a definite degree of curvature with given dimensions, such as I am practically using, which will serve as a sufficient guide to those skilled in the manufacture of mowing-machines. With a seven-foot finger-bar, four inches wide at the inner end, two inches wide at the outer end, and half an inch thick, a downward middle curvature sufficient to depress the same one inch, or thereabout, from a straight line drawn from one end of the finger-bar to the other in the lowest place will effect the result sought. The lowest depression should be at about one-third, or a little more, of the length of the finger-bar distant from its inner end, outside of the shoe on which it is mounted. The curvature is nearly uniform from the shoe to the point named, and outside of that the curvature soon vanishes into a straight line, which is thence continued to the outer end of the finger-bar. A little trial in the manufacture, with special dimensions and materials, will soon determine to the skilled workman the degree of curvature required, whether as above set forth or a slight variation therefrom.

A finger-bar curved or bent as above described, or so as to effect the result above set forth, I will in this specification simply term a "curved finger-bar," and by this term I intend to designate such a finger-bar.

Another feature of my invention consists in

an improvement in mounting the balance-lever set forth in the said Letters Patent of October 5, 1880. It being requisite or desirable to vary the power of this lever B exerted on the finger-bar A, according to varying conditions or circumstances, I effect this purpose by pivoting the same on a movable adjustable pivot or fulcrum, C, attached to or formed with a clamp, *a*, which embraces the coupling-arm D, and which is secured in the position to which it is adjusted on the said coupling-arm by a set-screw, *b*. Thus not only is the adjustment readily and easily effected, but the mounting is stronger than when the pivot or fulcrum pin is inserted in the coupling-arm. As a special feature of construction I form this clamp *a* with the main part embracing three sides of the coupling-arm, and the fourth side, *c*, a separate piece, with tenons at the ends to fit between forks *d d* on the ends of the main part, which are clinched or swaged around the tenons, as shown in Fig. 5, to hold the said piece to the main part and retain it on the coupling-arm. By the adjustment of the lever pivot or fulcrum along the coupling-arm, the end of the lever which presses on the inner end or heel of the finger-bar, or on the adjacent shoe, is adjusted nearer to or farther from the pivot *f*, on which the finger-bar turns, and consequently varies the leverage of the finger-bar, upon which the said lever acts.

To prevent injurious wear where the lever bears on the finger-bar or shoe, I mount an anti-friction roller, *g*, on the bearing end of the lever, as shown in Figs. 1 and 5, which roller plays on a concave surface, *h*, where it bears on the shoe or finger-bar.

I claim as my invention—

1. In a mowing and reaping machine, the finger-bar formed with a downward middle curvature, substantially as and for the purpose herein specified.

2. A curved finger-bar, in combination with means for sustaining the outer end of the finger-bar from the inner end of the same.

3. A curved finger-bar, A, in combination with a counterbalancing-lever, B, substantially as and for the purpose herein specified.

4. The combination of the coupling-arm, the balance-lever, and the adjustable clamp mounted on the coupling-arm, and provided with the fulcrum-pin C, for the purpose specified.

5. The pivot-clamp consisting of the three sides *a* and a separate side, *c*, secured thereto, substantially as specified.

In testimony whereof I have signed my name in the presence of two witnesses.

EPHRAIM SMITH.

Witnesses:
NICHOLAS VEEDER,
JOHN B. SMITH.