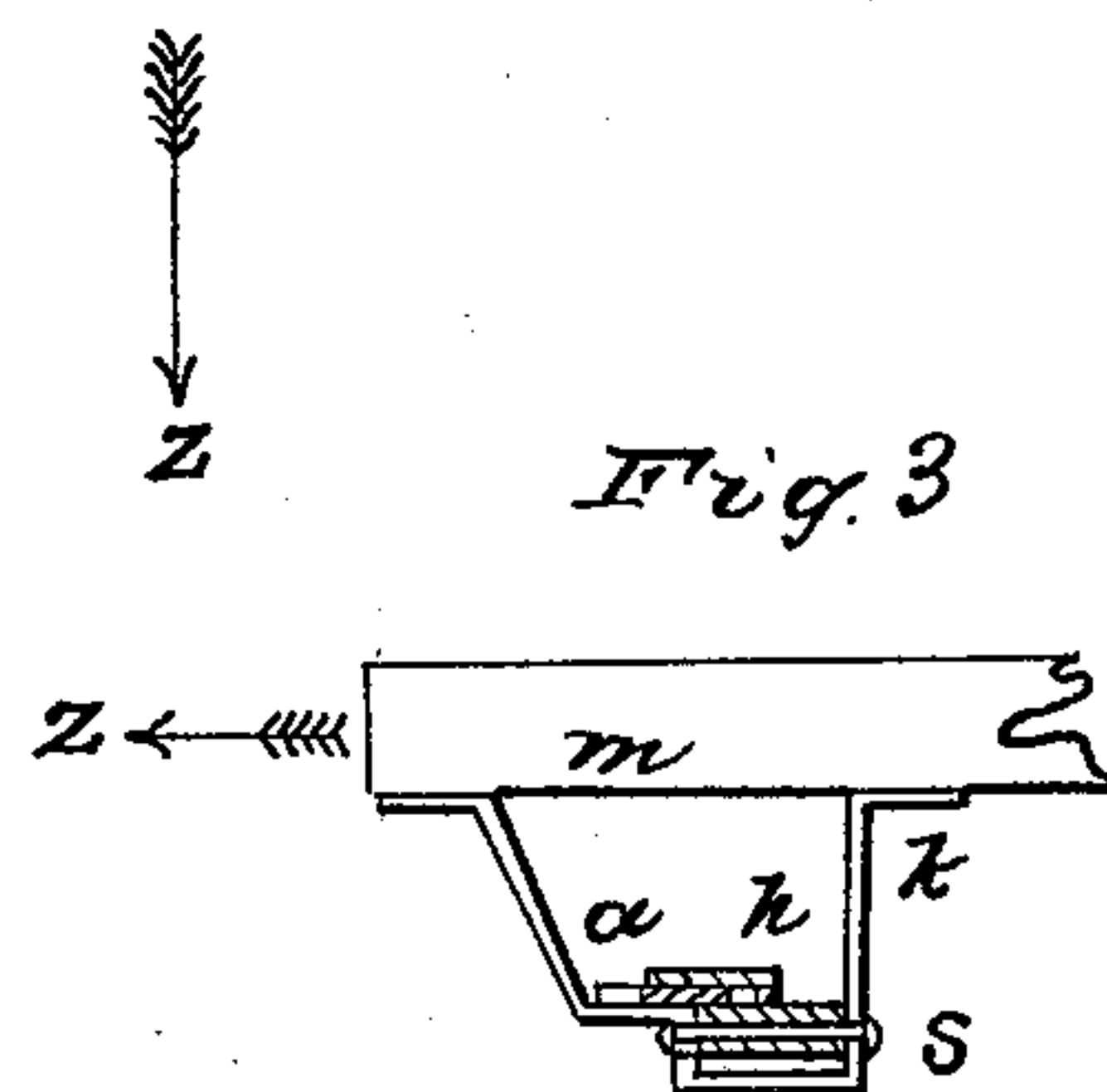
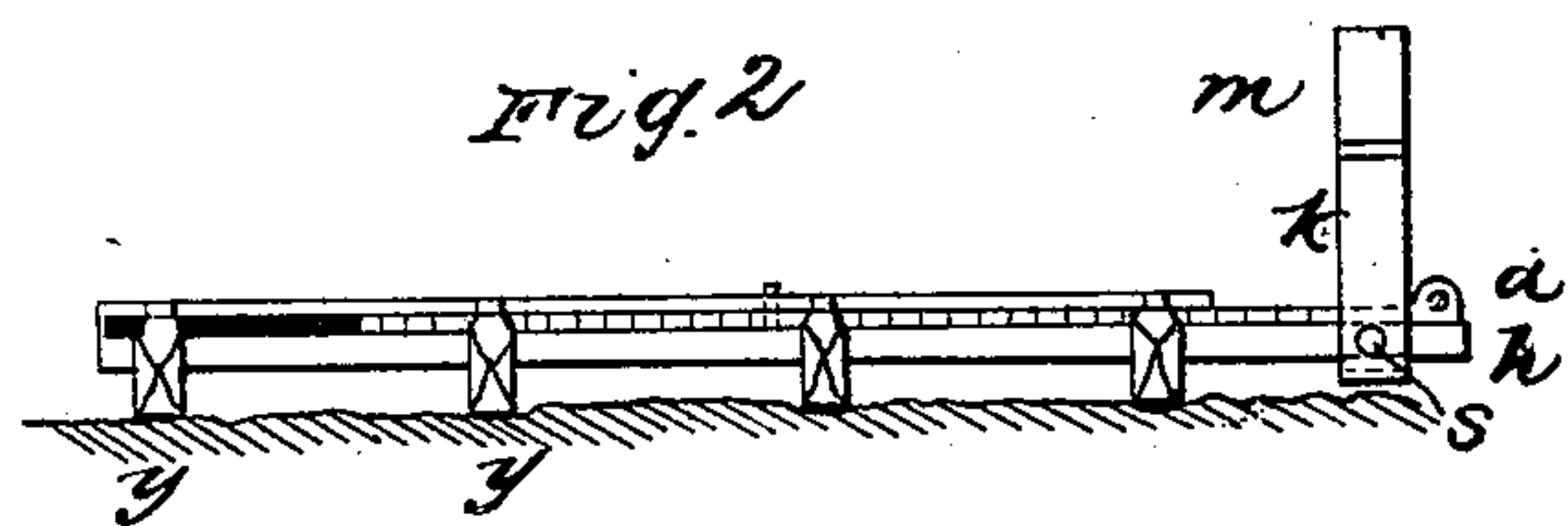
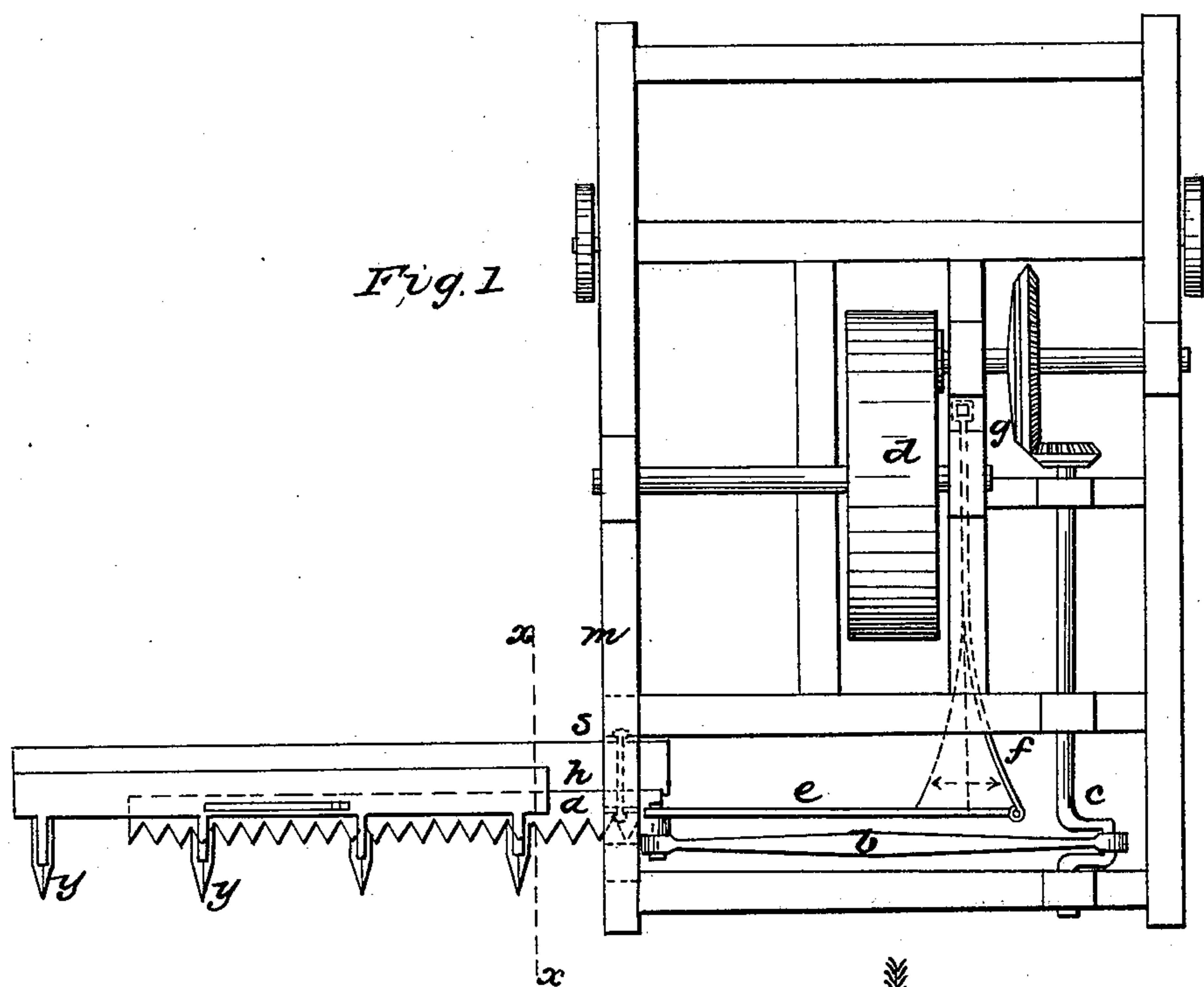


L. BARNES.
Mowing Machine.

No. 14,046.

Patented Jan. 8, 1856.



UNITED STATES PATENT OFFICE.

LEBBEUS BARNES, OF ISLIP TOWNSHIP, SUFFOLK COUNTY, NEW YORK.

IMPROVEMENT IN HARVESTERS.

Specification forming part of Letters Patent No. 14,046, dated January 8, 1856.

To all whom it may concern:

Be it known that I, LEBBEUS BARNES, of the township of Islip, in the county of Suffolk and State of New York, have invented a certain new and useful Improvement in Operating the Cutter-Bar of Harvesting and Mowing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form part of this specification, and in which—

Figure 1 represents a plan of a mowing-machine constructed according to my improvement; Fig. 2, a longitudinal front view of the cutter-bar and bar-rest, showing its attachment to the frame of the machine; and Fig. 3, a transverse vertical section of the cutter-bar and bar-rest, taken, for the most part, as indicated by the line *x x* in Fig. 1, but showing the fulcrum-bolt in full and exhibiting its attachment to the fixed framing. The arrows *z z* in Figs. 1 and 3 indicate the direction of the machine's travel.

In the various machines for cutting down grain or grass, whether acting simply as mowing-machines or mowing and reaping machines combined, employing cutters of a reciprocating character arranged to operate transversely, or thereabout, to the line of draft, and most generally on one side of it, there is a deadness of action accompanying the cut, which, it would appear, almost naturally belonged to a mechanically-driven device of that kind, and which a cutter operated by hand has not, owing to the peculiar organization and elastic character of the driver, and thus it is that, comparatively for the amount of force expended, manual labor for such purposes is superior to an automatic mechanically-driven movement. The jerk, too, attending a quick reciprocating motion is alike injurious to the cutter and machinery which drives it or with which it works in connection, and the friction consequent upon the jar induces excessive wear and consumes labor. This latter defect, however, has been partially remedied by employing springs or weights about the driving-gear to lessen the effect of shock attendant upon the general movement of the parts, but more especially upon the stoppage of one stroke and commencement of a new stroke of the cutter or cutters; but these, from the rigid character of the cutters and from the disposition and arrangement of such springs or coun-

terbalance-weights, are not immediately felt by the cutter, and, though tending to lessen noise, equalize force, reduce friction, and save the machinery from injurious wear, the cut itself retains the same deadness of character which it is the main object of my invention to avoid. To effect this desideratum without making the cutter-bar objectionably flexible and without affecting the positive motion of the reciprocating cutter *a* as due to its operation by a rigid pitman, *b*, driven by a crank, *c*, deriving its motion by suitable gear from the friction of the main running-wheel *d* on the ground, as usual, I attach by rod *e* direct to the cutter-bar or spring *f*, pivoted or secured to the fixed frame at a distant or near point, *g*, and so arranged that the spring, as shown in black, red, and blue lines, Fig. 1, indicating the two end and half-way positions of its vibratory motion or travel, shall be at its inactive point when the cutter is midway of its movement in either direction, and so that the spring and cutter are kept in such joint continuous or partly so motion as that, while the spring gradually in an increasing way pulls back upon the cutter during the latter part of its travel in the one direction, it pushes or pulls the cutter forward to the same extent of force, but in a reverse graduation, during the first part of the cutter's travel each stroke, and in this way not only is no power lost in the operation of the springs, but a life-like elastic action is given to the cutter without limitation as regards the strength and rigidity of the cutter-bar, though by the direct connection and arrangement specified of the spring with the cutter the immediate action of the spring is felt upon the cutter, the spring having no connection with the driving-gear otherwise than through the cutter; yet it is obvious that the shock or jar consequent upon stoppage and return of stroke, with the increase of friction and labor attendant thereon, will be similarly affected or neutralized as by the spring and counterbalance-weight arrangements before referred to, and this more immediately and importantly so as regards the action of the cutter. Thus by the immediate and separate attachment of a spring to the cutter, arranged to operate in connection therewith as specified, is a smooth, easy, and life-like action given to the cut, which by this means is made more steady and natural, and that deadness pecu-

liar to an automatic mechanically-driven cutter is avoided through the same rigidity of the cutter-bar and its positive motion by a rigid driver is preserved. The advantageous effect in practice of this improvement is greater, as I have proved, than might appear due to it in theory, though a careful investigation into the merits of it as here set forth must convince the most skeptical that a spring having its fulcrum separate from the driving-gear and acting as specified in concert with the cutter must of necessity produce an advantageous result.

Of course a spring or springs of different build and otherwise arranged may be employed without departing from the character of my invention—as, for instance, a coiled spring may be let into the cutter-bar rest and be attached at its one end to the cutter-bar intermediate of its length, or other arrangements equivalent in effect may be adopted.

Where two reciprocating cutters are used, simultaneously moving in opposite directions, a separate spring arrangement of the character described may be applied to each.

Another defect incidental to the cut in bars operating as described is the want of an easy self-adjustability of the cutter-bar to the varying altitudes and irregularities of the ground in direction of the cutter's length to insure the same height of cut from the ground all over the field, and this is of most importance in the

mowing of grass, &c. Various flexible frames and other arrangements have been devised to effect, this but practically without avail, or but imperfectly so. I obtain this desired result by hinging freely the cutter-bar rest *h* by a joint or hinge-pin, *s*, to a bracket, *k*, or its equivalent, connected with the frame *m* in such a manner that the cutter or cutters (for one, two, or more may be employed) and cutter-bar rest being supported by the teeth or fingers *y*, acting as runners on the ground or being otherwise equivalently supported, will rise and fall freely throughout their length on the hinge-pin *s* as a fulcrum or center according to the slope or inequalities of the ground, the cutter and its appurtenances thus being hung, as it were, on a hinge at its one end. This forms a simple, practical, and perfectly free mode of hanging the cutters to insure an evenness of cut so desirable in mowing, &c.

What I claim as new and useful herein, and desire to secure by Letters Patent, is—

The application to the reciprocating cutter-bar of a mowing-machine or reaper of a spring or springs driven by or operating in connection with the cutter, essentially as specified.

In testimony whereof I have hereunto subscribed my name.

L. BARNES.

Witnesses:

WM. M. SMITH,
A. GREGORY.