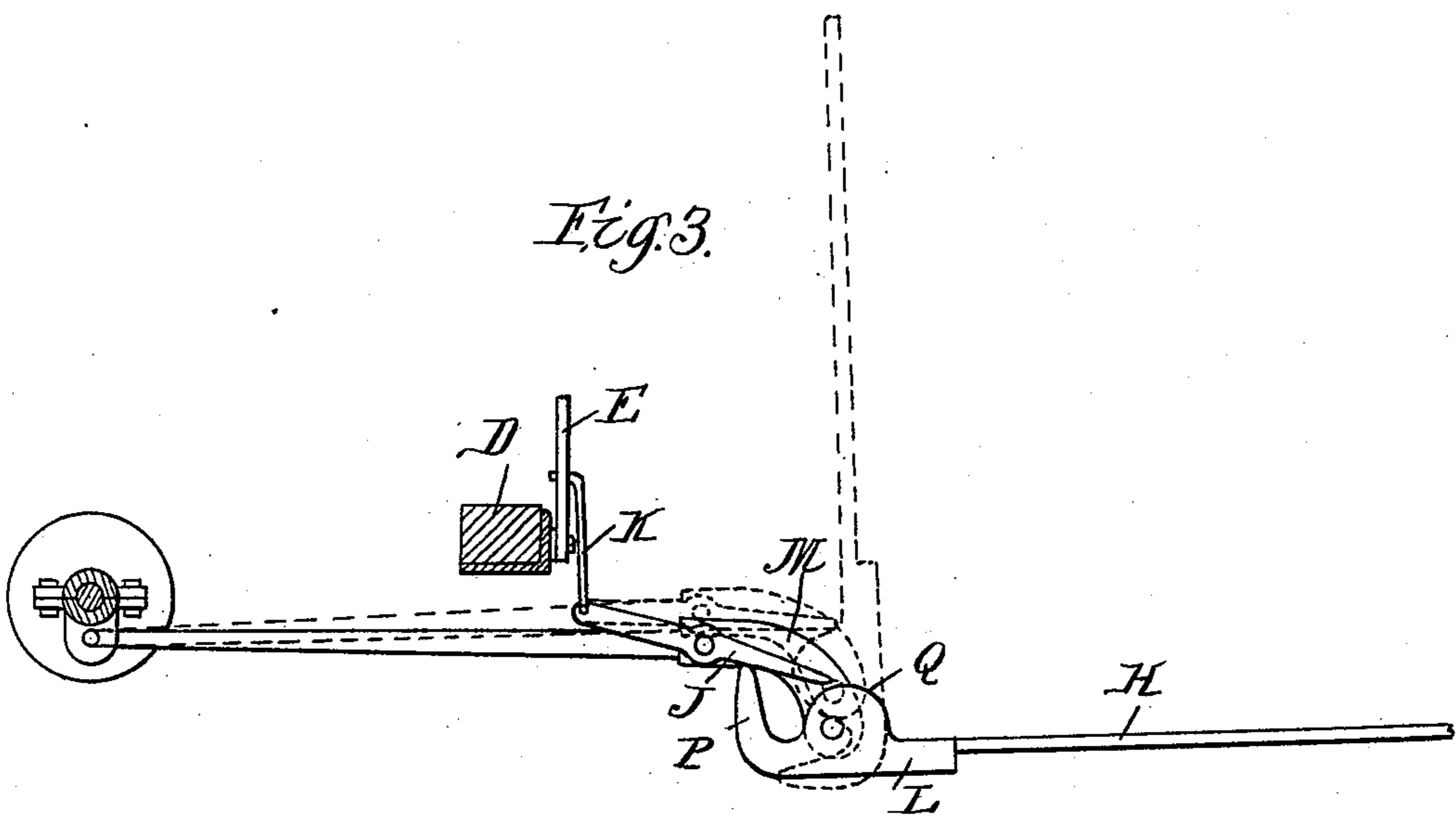
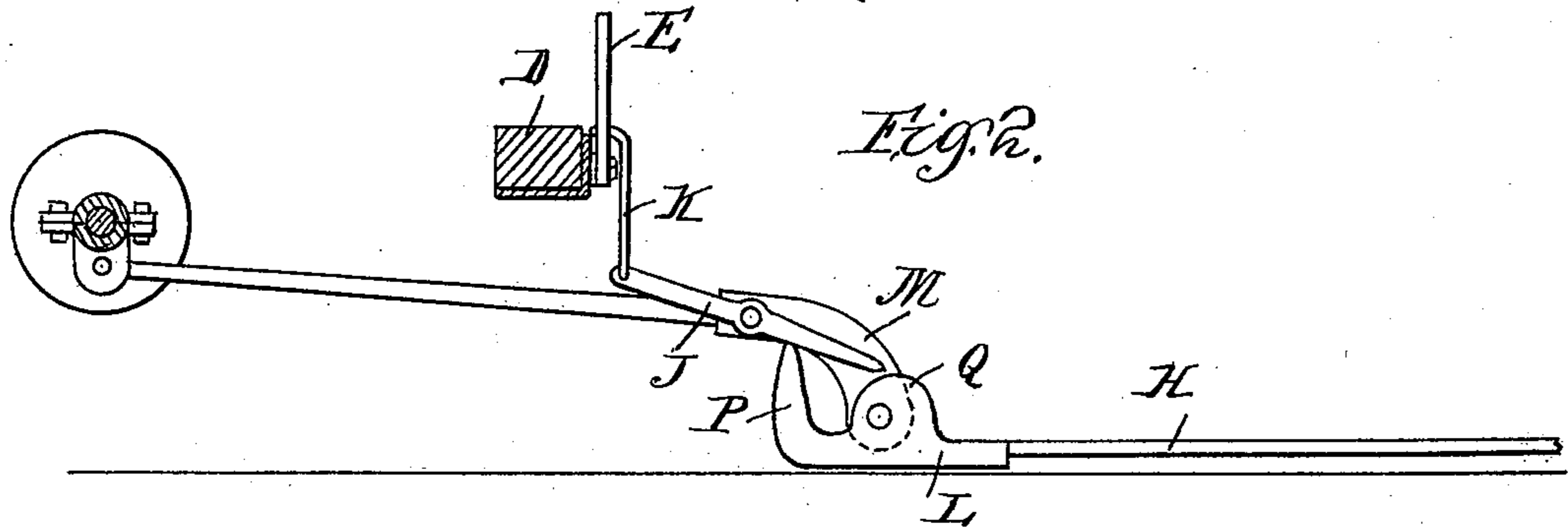
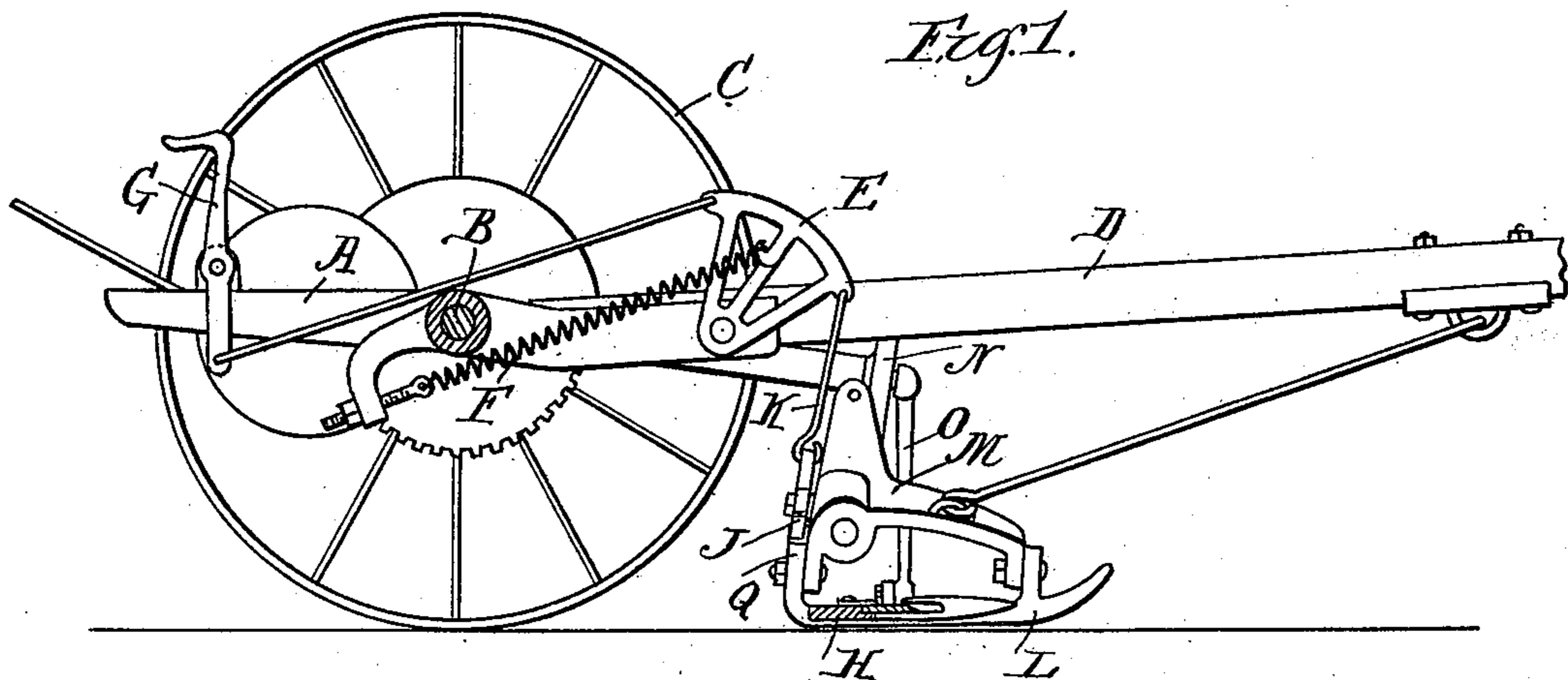


(No Model.)

M. KANE.  
MOWING MACHINE.

No. 594,021.

Patented Nov. 23, 1897.



Witnesses.

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# UNITED STATES PATENT OFFICE.

MAURICE KANE, OF AUSTIN, ILLINOIS.

## MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 594,021, dated November 23, 1897.

Application filed February 5, 1897. Serial No. 622,199. (No model.)

*To all whom it may concern:*

Be it known that I, MAURICE KANE, a citizen of the United States, residing at Austin, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Mowing-Machines, of which the following is a specification.

This invention relates to mowing-machines.

The object of the invention is to provide means whereby the inner end of the finger-bar may not be unduly lowered when the outer end of said bar is raised by means other than the hoisting-lever.

The invention consists, substantially, in the construction, combination, location, and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally specifically set forth in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a view in vertical longitudinal section of a mowing-machine with my invention applied thereto. Fig. 2 is a view in vertical transverse section illustrating the arrangement and application of my invention. Fig. 3 is a view similar to Fig. 2, illustrating various positions of the finger-bar and gag-lever during the operation of my invention.

The same part is designated by the same reference-sign wherever it occurs throughout the several views.

In the drawings reference-sign A designates the frame of a mowing-machine; B, the main axle; C, the traction-wheel; D, the tongue; E, the bell-crank lever; F, the counterbalancing-spring; G, the foot-lever connected to the bell-crank lever for actuating the same; H, the finger-bar; J, the gag-lever; K, the connecting-link between the gag-lever and the bell-crank lever; L, the shoe upon which the finger-bar is supported; M, the bracket or hanger in which the shoe is pivotally mounted and on which the gag-lever is pivotally mounted; N, the driving-gear for the cutter-bar, and O the pitman connecting the cutter-bar with its driving-gear. All these parts may be of the usual or any ordinary or convenient construction and arrangement, and hence they need not be described

herein in the details of their construction and arrangement.

In the operation of the construction so far referred to, as is well understood by persons skilled in the art, the finger-bar, which is commonly referred to as a "floating bar," is counterbalanced by the spring F, so that said bar will be maintained in position substantially parallel with the ground, but is, under the influence of said counterbalancing-spring, permitted to rise and fall when unevenness in the ground or surface over which the machine operates is encountered. In order to pass obstructions over which the machine cannot operate and for other purposes, the bar may be raised, still maintaining its position substantially parallel with the ground, through the actuation of foot-lever G through its connections with said bar—namely, the bell-crank lever E, connecting-link K, and gag-lever J—said gag-lever being pivotally mounted on the bracket M, which is thereby also raised, and the end of said lever beyond its pivot being arranged to take bearing on the heel projection P of shoe L. It will be observed that the influence of spring F is normally exerted equally on both ends of the finger-bar in order to perform its function of a counterbalance for said bar. It will also be seen that the force of said spring is applied through the bell-crank E, the connecting-link K, and gag-lever J in the same manner as the power applied to foot-lever G when it is desired to raise the finger-bar bodily away from but parallel with the ground—that is to say, the force of said spring is applied in a direction tending to normally elevate the inner end of gag-lever J and to depress the outer end of such lever—but the said outer end of the gag-lever is, as above explained, arranged to bear upon the heel projection P of the shoe L, and hence the force of the spring is applied in a direction to depress such heel projection. This heel projection being on one side of the axis upon which the finger-bar is pivoted and the outer end of said bar being on the other side of such axis the weight of the finger-bar is counterbalanced by such spring. Now suppose the outer end of the finger-bar should be raised by means other than the foot-lever G—for in-

stance, by hand—as when it is desired to raise the bar into a vertical position, as indicated in dotted lines, Fig. 3, for transportation, or by encountering an obstacle or uneven surface which is not encountered by the inner end, then such outer end of the finger-bar is relieved of the force of spring F, and the force of such spring which before had been equally applied to the inner and outer end of the bar is now applied only to the inner end by reason of the outer end of the gag-lever encountering the stop usually provided in such construction. The link K and inner end of gag-lever J being pivotally connected together act as a toggle-joint, and under the conditions named tend to straighten out and to assume a position such as to form a straight line from the point of connection of link K with bell-crank lever E to the point of pivotal support of gag-lever J upon bracket M. This tendency is increased by reason of the depression of the heel projection P consequent upon the elevation of the outer end of the finger-bar. Now the point of pivotal connection of link K with bell-crank E being a fixed point any tendency of the link K and gag-lever to form a straight line will necessarily cause the point of pivotal connection of said lever J with bracket M, and hence also the bracket and with it the shoe L and the inner end of the finger-bar to be lowered. It is the purpose of my invention to avoid this lowering of the inner end of the finger-bar under the conditions mentioned, and I accomplish the desired object in the following manner: I form the shoe L with a cam-surface Q and I extend the outer end of the gag-lever J a sufficient distance to be engaged by and to ride upon such cam-surface, as clearly indicated in full and dotted lines in Fig. 3, only sufficient clearance being left between the end of such gag-lever and the cam-surface Q to enable the gag-lever to normally rest upon the heel projection P when the finger-bar is in its normal horizontal or working position. The cam-surface may be arranged in any suitable manner, but in practice and as shown I prefer to arrange such surface in the form of an eccentric with reference to the pivotal axis of shoe L on bracket M.

From the foregoing description it will be seen that as the outer end of the finger-bar is raised independently of the foot-lever G, whether by hand, as when it is desired to fold the same into an upright position for transportation, as indicated in dotted lines, Fig. 3, or by encountering an obstruction or uneven place in the surface over which the machine is operating and which obstacle or unevenness is not encountered by the inner end of the bar, the outer end of the gag-lever is caused to rest upon and to slide over the eccentric or cam surface Q. The cam or eccentric thus forms a stop, preventing the tendency of the link K and gag-lever to straighten out, and hence prevents a lowering of the inner end of the finger-bar. The increasing ec-

centricity of the cam-surface over which the end of the gag-lever rides as the outer end of the finger is raised higher and higher, causes the gag-lever to rock about its point of connection with link K as a fulcrum, and hence elevates rather than depresses the frame or bracket supporting the inner end of the finger-bar, as clearly indicated in dotted lines, Fig. 3.

It has been proposed heretofore to employ stops on the bracket or shoe in the path of the gag-lever with which the gag-lever contacts to limit its rocking movement. It is also common to provide a considerable clearance between the gag-lever and such stop in order to permit of a suitable range of movement of the outer end of the finger-bar to suit the conditions of the ground. Such prior constructions, however, are objectionable for the reason that the greater the clearance between the gag-lever and such stops the lower the inner end of the finger-bar will drop when the finger-bar is folded to upright position for transportation, and less the clearance then the raising of the outer end of the finger-bar through means other than the foot-lever will effect a corresponding raising of the inner end, thus not only involving an uneven and unsatisfactory cutting of the grass, but also requiring the expenditure of an unnecessary amount of power to effect a raising of the bar.

By my invention, as above described, not only is the inner end of the finger-bar prevented from being lowered by the elevation of the outer end, but the clearance between the outer end of the lever and the cam-surface or stop on the shoe is compensated for, and the end of the gag-lever is constantly maintained in suitable operative position, even though the finger-bar is folded to an upright position with the heel projection entirely removed as a rest for said gag-lever.

Having now set forth the object and nature of my invention and a form of apparatus embodying the same, and having explained the construction, function, and mode of operation of such apparatus, I desire it to be understood that I do not confine or limit myself to the exact construction shown and described, as many changes and variations in the details of construction and arrangement of parts would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention; but

What I do claim as new and useful and of my own invention, and desire to secure by Letters Patent of the United States, is—

1. In a mowing-machine, a finger-bar, means for raising and lowering said bar, and a counterbalance in combination with means for compensating for the lowering of the inner end of said bar when the outer end thereof is raised or folded to an upright position independently of the said raising and lowering means, as and for the purpose set forth.

2. In a mowing-machine, a finger-bar, and means for raising and lowering the same, in

combination with means whereby the raising of the outer end of said bar to folded or upright position and independently of the said raising and lowering means, also effects a raising of the inner end of said bar, as and for the purpose set forth.

3. In a mowing-machine, a finger-bar, a bell-crank lever, and a gag-lever connection between said bar and bell-crank, and means whereby the raising of the outer end of said bar to an upright position and independently of the said raising and lowering means, effects a raising of the inner end of said bar, as and for the purpose set forth.

4. In a mowing-machine, a finger-bar having a heel projection and a cam-surface, a bell-crank lever, connections between said bar and bell-crank lever, including a gag-lever, said gag-lever arranged to engage and bear on said heel projection when said bar is in its normal working position, the end of said gag-lever being arranged to engage said cam-surface when the outer end of said bar is raised independently of said bell-crank lever, as and for the purpose set forth.

5. In a mowing-machine, a finger-bar, pivotally mounted and provided with a cam-surface and means arranged to be engaged by said cam-surface when the outer end of said bar is raised to an upright position, for raising the inner end of said bar, as and for the purpose set forth.

6. In a mowing-machine, a finger-bar, pivotally mounted and provided with a surface eccentric with reference to the axis of the

pivot of said bar, and means arranged to be engaged by such eccentric surface when the outer end of said bar is raised to an upright position, for preventing the inner end of such bar from being lowered, as and for the purpose set forth.

7. In a mowing-machine, a frame, a bell-crank lever pivotally mounted thereon, a foot-lever for rocking the same, and a counter-balancing-spring connected at one end to said frame and at the other to said bell-crank lever, in combination with a bracket, a shoe pivotally mounted thereon and provided with a heel projection, a finger-bar mounted at one end on said shoe, a gag-lever pivotally mounted intermediate its ends upon said bracket, a link pivotally connected at one end to said bell-crank lever and at the other end to one end of said gag-lever, the other end of said gag-lever arranged to bear on said heel projection when said bar is in its normal working position, and a cam-surface formed on said shoe and arranged to engage the free end of said gag-lever when the outer end of said bar is raised by means other than said bell-crank lever, as and for the purpose set forth.

In witness whereof I have hereunto set my hand this 2d day of February, 1897, in the presence of the subscribing witnesses.

MAURICE KANE.

Attest:

S. HUTCHISON,  
S. E. DARBY.