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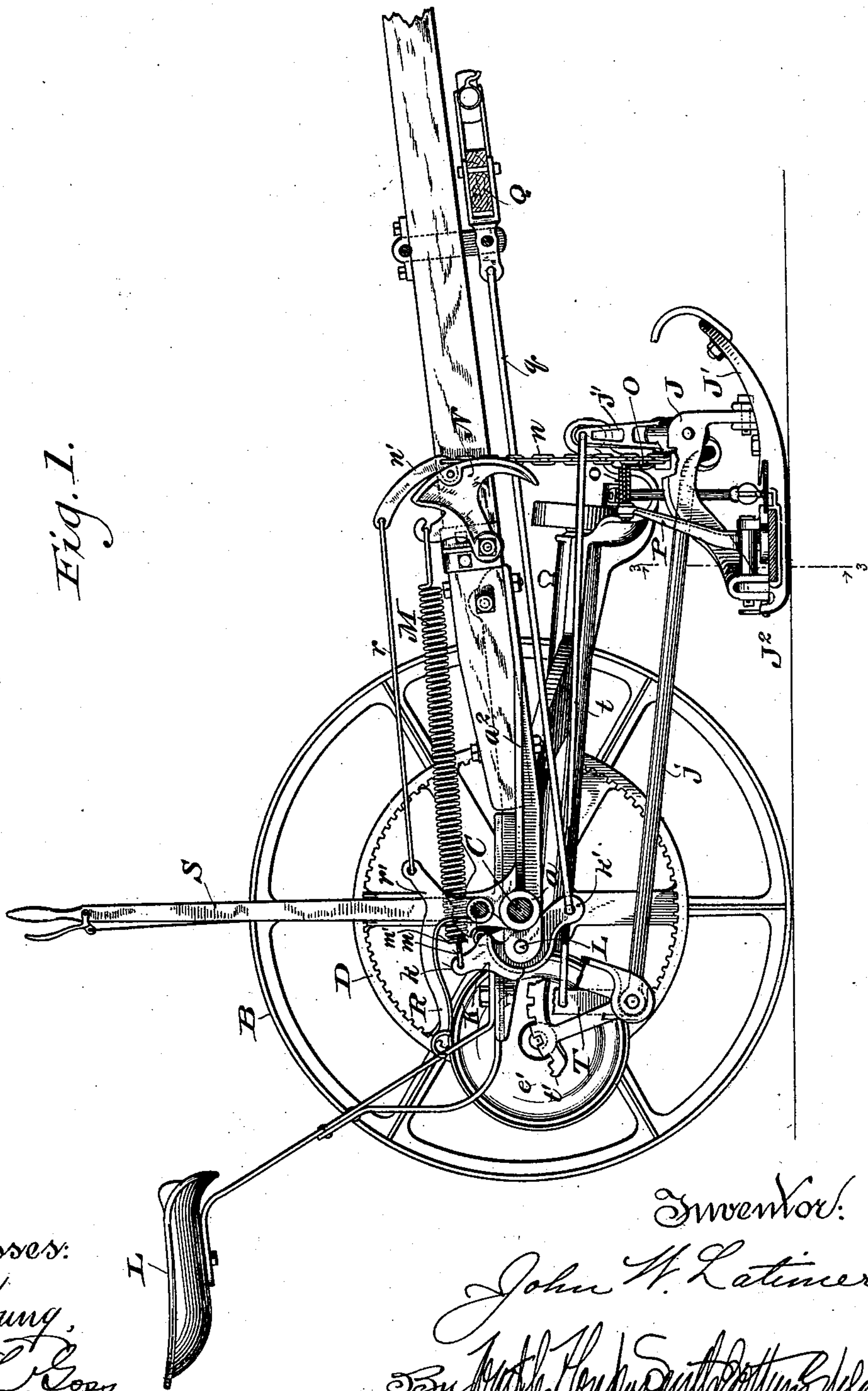
4 Sheets—Sheet 1.

J. W. LATIMER.
MOWING MACHINE.

No. 509,317.

Patented Nov. 21, 1893.

Fig. 1.



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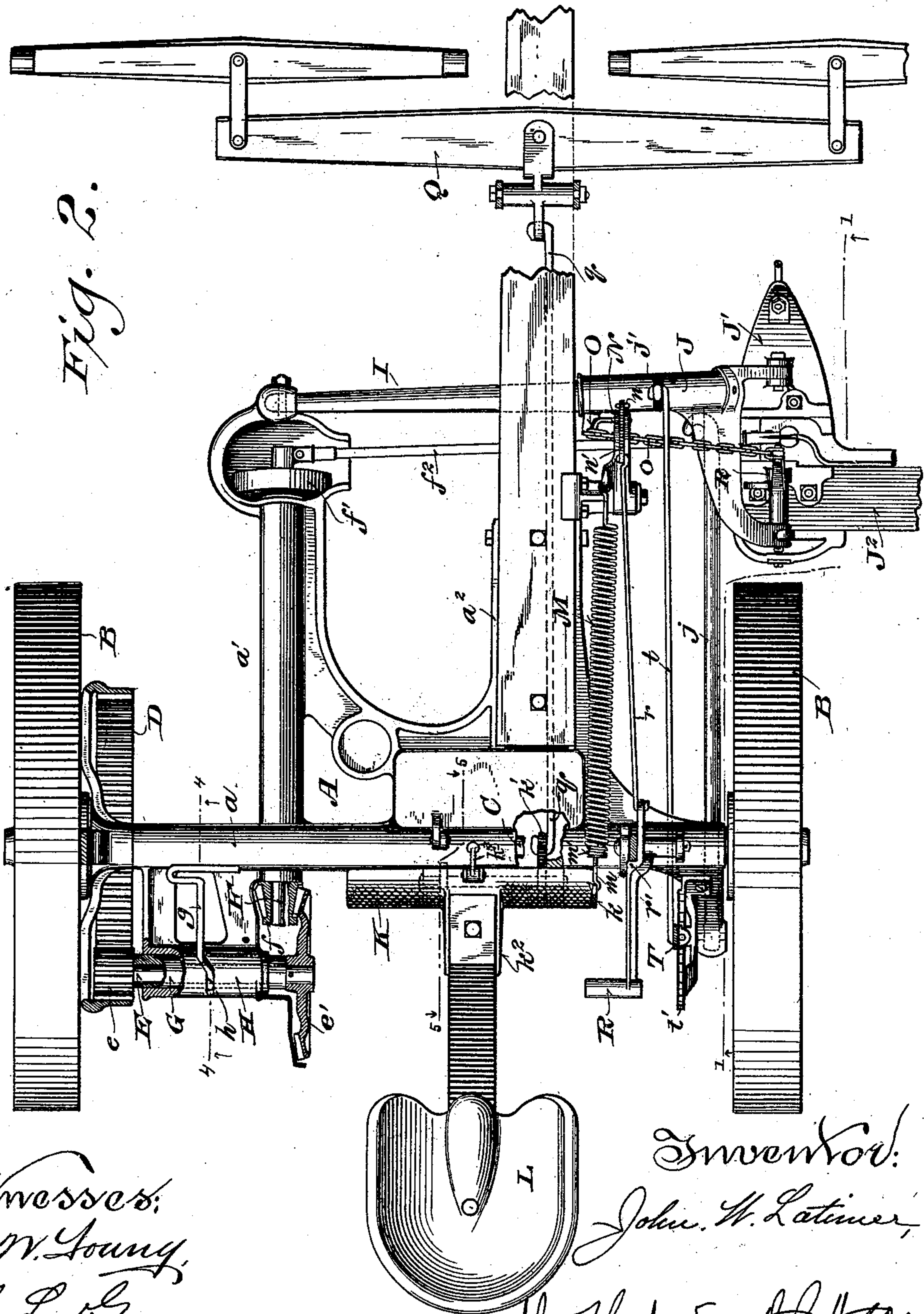
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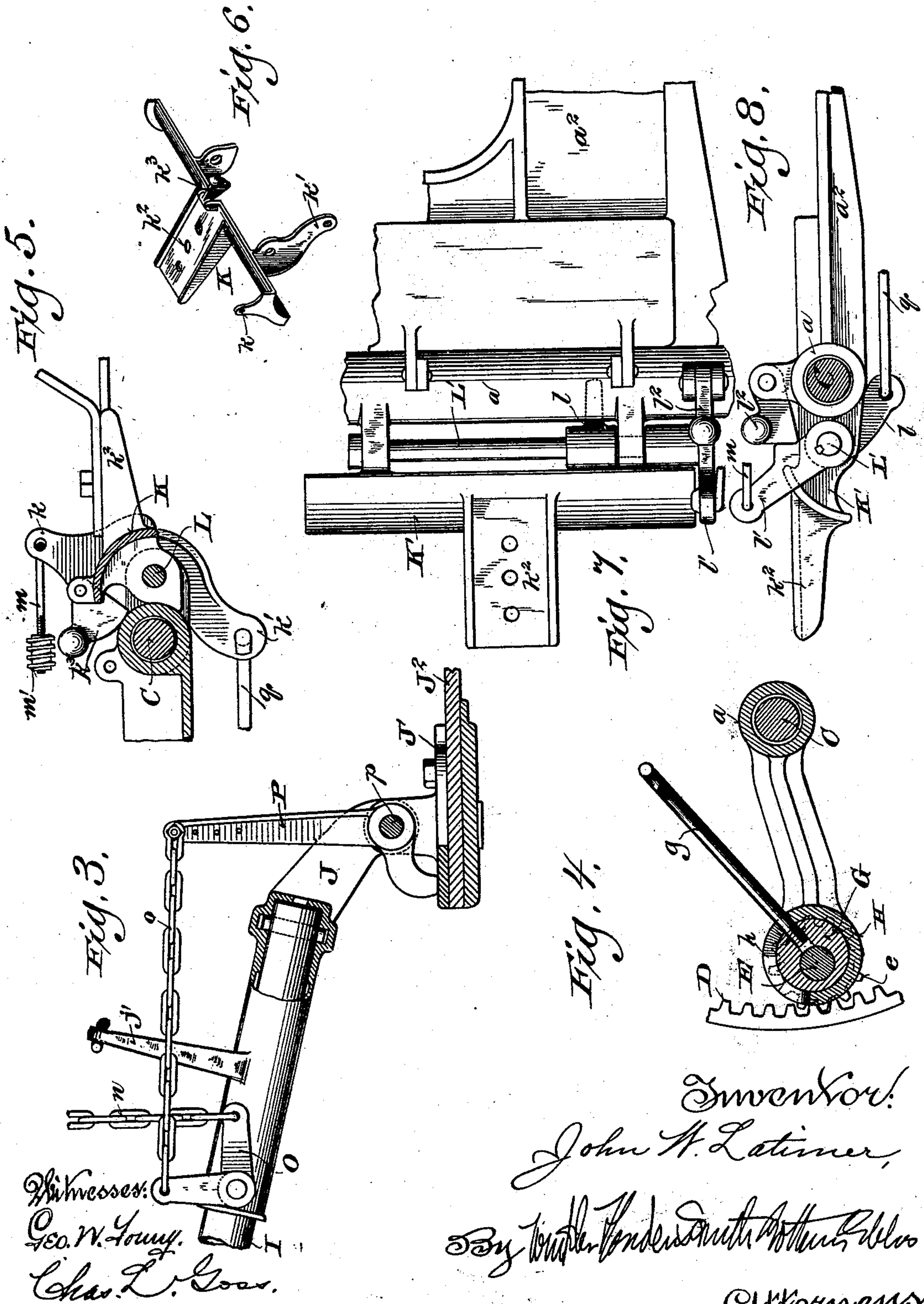
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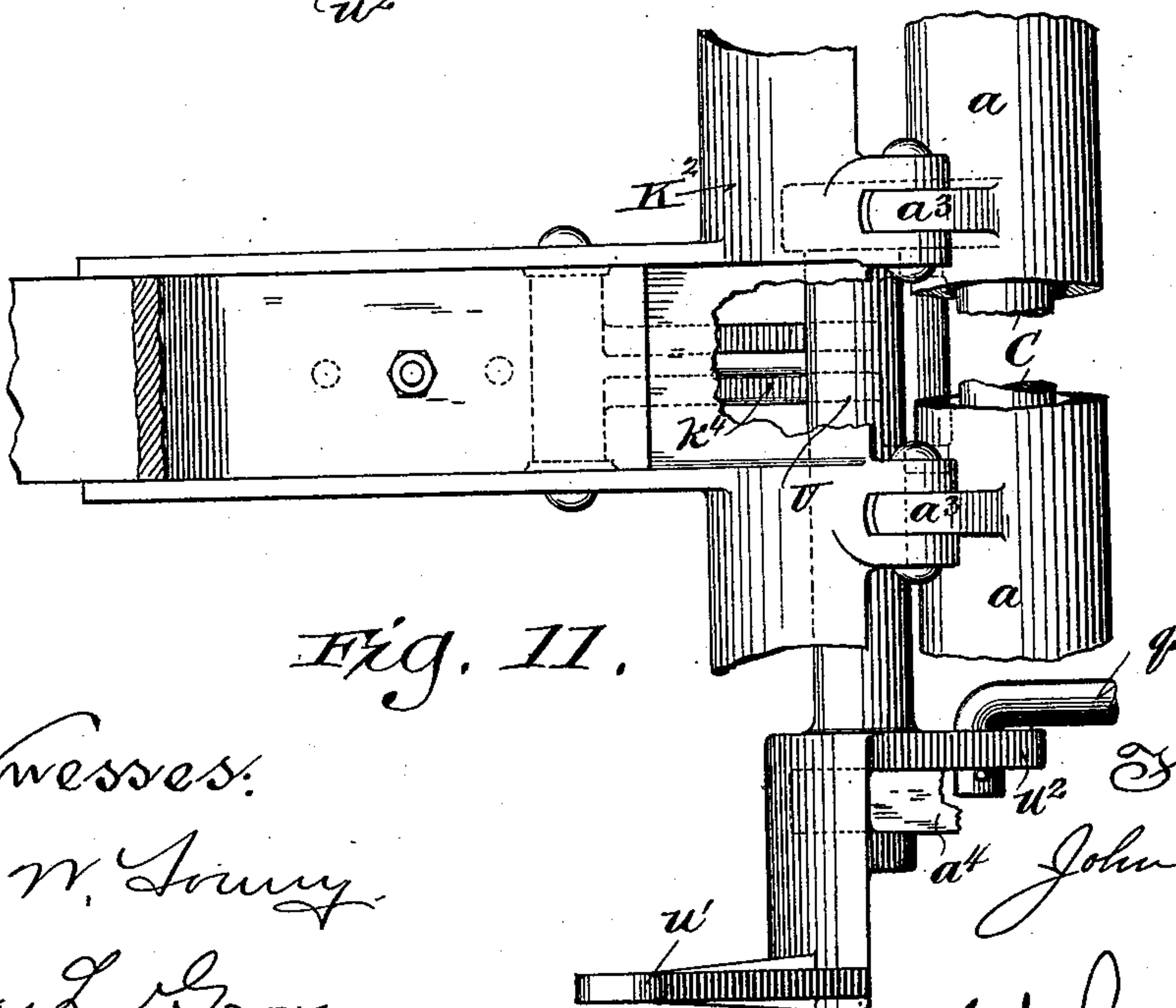
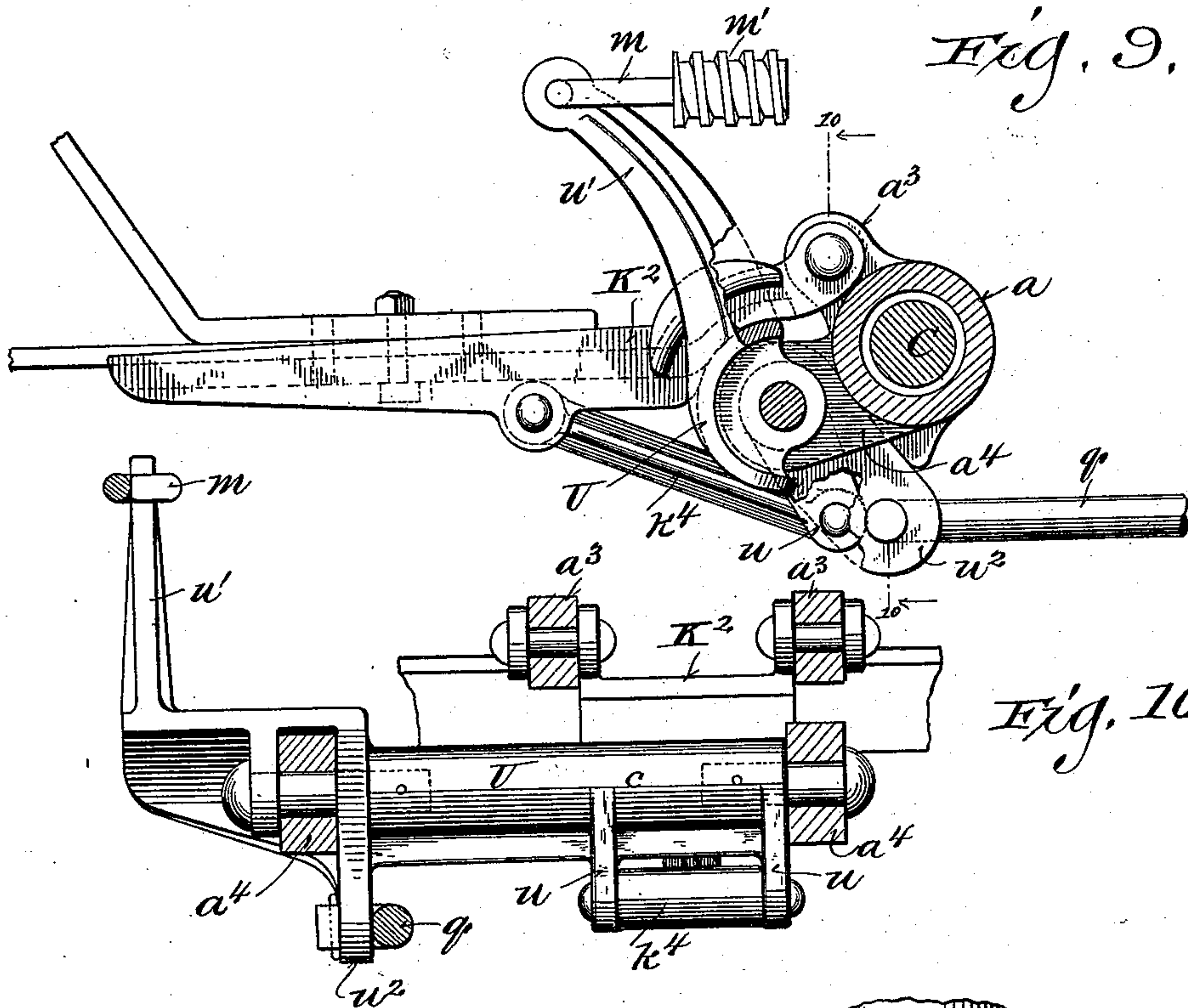
(No Model.)

4 Sheets—Sheet 4.

J. W. LATIMER.
MOWING MACHINE.

No. 509,317.

Patented Nov. 21, 1893.



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UNITED STATES PATENT OFFICE.

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MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 509,317, dated November 21, 1893.

Application filed April 13, 1893. Serial No. 470,187. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. LATIMER, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Mowing-Machines; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The main objects of my invention are to prevent the dragging of the cutting apparatus and thereby diminish the direct draft and avoid side draft of the machine; to take the weight of the cutting apparatus off from the horses' necks when the machine is not in operation; to utilize the weight of the driver or the draft of the team or both, to sustain the weight of the cutting apparatus, and at the same time hold the finger bar steady and avoid the communication of abrupt movements or variations in weight or draft through the intermediate connections between the seat or draft and the cutting apparatus.

It consists essentially of a seat support movably connected with the frame and having an elastic connection with the cutting apparatus; of an elastic connection between the draft connection and the cutting apparatus; of a longitudinally and laterally movable gear shaft in connection with internal and bevel gears, and of certain other novel features of construction and arrangement hereinafter particularly described and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a side elevation and partial vertical section on the line 1, 1, Fig. 2, of a mowing machine embodying my improvements. Fig. 2 is a plan view of the same. Fig. 3 is an enlarged vertical section on the line 3, 3, Fig. 1, viewed from the left, showing a portion of the coupling bar, the inner end of the finger bar and associated parts. Fig. 4 is a vertical section on an enlarged scale, taken on the line 4, 4, Fig. 2. Fig. 5 is a similar view taken on the line 5, 5, Fig. 2, but viewed

from the opposite direction. Fig. 6 is a perspective view of the seat support detached. Figs. 7 and 8 are respectively a plan view and side elevation on an enlarged scale showing a modification of the seat support and of the draft connection with the cutting apparatus; and Figs. 9 to 11 are detail views showing another modification of the seat support and draft connections, Fig. 9 being a partial side elevation and vertical cross section, Fig. 10 a vertical section on the line 10, 10, Fig. 9, and Fig. 11 a plan view.

A represents the frame of the machine, which in this case comprises a tubular portion a , through which the main axle passes, a tubular portion a' at right angles thereto, through which the fly wheel or crank shaft passes, and a tongue support a^2 .

B B are the main supporting and driving wheels mounted in the usual or any suitable manner upon the ends of the main axle C, with which they have the usual ratchet connections.

D is an internal driving gear fixed upon the main axle C on the opposite side of the machine from the cutting apparatus.

E is a short driving shaft parallel with the main axle, provided at one end with a pinion e , constructed and arranged to mesh with the driving gear D and provided at the opposite end with a bevel gear e' .

F is the fly wheel shaft supported in the tubular portion a' of the frame, and provided at its rear end with a bevel pinion f , arranged to mesh with the gear e' . It is provided at its front end in a suitable housing formed by an extension of the frame, with a fly or crank wheel f' , which is connected in the usual or any suitable manner by a pitman f^2 with the knife or cutter. The driving shaft E is supported in an eccentrically bored sleeve G, which in turn is held in a sleeve H, cast with or rigidly attached to the main frame, behind and parallel with its tubular portion a . The sleeve G is provided with a rod or arm g , projecting outwardly therefrom through an incline or cam slot h in sleeve H, shown in detail in Fig. 4. By turning the arm g backward, the shaft E is simultaneously shifted laterally forward toward the main axle and moved endwise toward the center of the ma-

chine, thereby carrying the pinion *e* out of engagement with the internal driving gear D, and the gear *e'* away from the pinion *f*. With the arrangement of gears herein shown and described, it is necessary for the purpose of moving the pinion *e* out of engagement with the gear D, to move the driving bevel gear *e'* away from its driven pinion *f*, otherwise the gear *e'* would bind upon the pinion *f* and prevent the disengagement of the pinion *e* from the gear D.

The device above described affords simple and effective means for connecting and disconnecting the driving gearing at a single operation.

I is the coupling bar pivotally connected at one end to the front part of the frame in line with the crank shaft F, and at its opposite end by a yoke J with the shoe J', to which the finger bar J² is attached. The yoke J is formed with a sleeve which encircles and is capable of turning on the coupling bar I and is forked and hinged or pivoted by its arms to said shoe in a line parallel with the draft of the machine.

j is a push bar or brace loosely connected at its rear end with a depending arm or bracket to the frame, and at its front end with the sleeve of yoke J.

The supporting or carrying connections of the finger bar hereinbefore described, constitute no essential part of my invention, but are shown and described as suitable for use in connection with my improvements, as they allow the cutting apparatus to conform freely in its movements to inequalities in the ground and permit of the desired tilting, elevating and folding adjustments or movements necessary or desirable in a machine of this kind.

K represents the seat support, which is hinged to the rear side of the tubular part *a* of the frame by means of a rod or bolt L, passing through perforated ears formed on said frame and support, as shown in detail in Figs. 5 and 6. It is formed or provided with an upwardly projecting arm *k*, a downwardly projecting arm *k'* and a rearwardly projecting plate *k²*, to which the seat L is adjustably attached, a number of holes being provided in said plate for the purpose, as shown in Fig. 6. By setting the seat farther back or forward, the leverage of the weight of the driver upon the seat support, which with its arms constitutes a lever, is increased or decreased.

k³ is a dog pivoted to the seat support and arranged to be turned between it and the frame, as shown in Fig. 5, for the purpose of locking said support rigidly in place with the frame in case for any reason it is desired to prevent the lifting operation of the driver or seat and the draft, through the spring M.

The upwardly projecting arm *k* is connected by a spiral spring M with the upper part of a quadrant lever N, pivoted to a bracket attached to the pole or to any convenient support, and in turn connected by a chain *n* with one arm of a bell crank lever O, fulcrumed at

its angle to the sleeve of yoke J, as shown in detail in Fig. 3. The other arm of said lever is connected by a chain *o* with the upwardly extending arm of a lever P, fulcrumed upon a pin or bolt *p*, to the shoe J' in the line of its hinge or pivot connections with yoke J, and formed with a short angular arm which bears upon the inner end of the finger bar or a portion of the shoe. The weight of the driver acts through the seat support K and the connections last above mentioned, primarily upon the coupling bar I, tending to lift the shoe J' and inner end of the finger bar, and secondarily through the lever P, tending to lift the outer end of the finger bar. In this way the driver's weight tends to counterbalance the weight of the finger bar and to prevent its dragging heavily upon the ground.

The chain *n* is connected with the quadrant N through the medium of an angular lever *n'*, fulcrumed by its shorter arm to said quadrant at an intermediate point in its periphery, and having its longer upwardly extending arm curved to correspond with the curvature of the adjacent portion of the periphery of said quadrant. A foot lever R, fulcrumed to the upper side of the tubular portion *a* of the frame within convenient reach of the driver's right foot, is connected by a rod *r* with the upper end of the lever *n'*, and serves to lift the shoe J' and the inner end of the finger bar, to pass over obstructions or for any other purpose. A hand lifting lever S, fulcrumed to the frame concentrically with the lever R, is arranged when swung backward to engage with a shoulder *r'* on the lever R, and through it to lift the shoe J'. The driver is thus enabled by either hand or foot to raise the cutting apparatus. The lever *n'* serves also as a stop to limit the expansion of spring M and the descent of the shoe J', thereby preventing it from dropping too far into holes or abrupt depressions over which the machine may pass, the upper end of said lever *n'* being held rigidly in place by its connection with levers R and S. The downward movement of the quadrant N is arrested when its periphery comes in contact with the upper portion of said lever. I utilize the draft of the team also, either alone or in connection with the weight of the driver, to counterbalance the cutting apparatus, by connecting the evener Q, which is loosely suspended from or movably connected with the pole, by a draw bar *q*, with the downwardly projecting arm *k'* of the seat support K. The draft of the team is thus transmitted through the seat support and its connections hereinbefore described, to the cutting apparatus, which it tends to lift from the ground.

To adjust the tension of spring M, I provide for its attachment at one end, a hooked rod *m*, having a screw threaded plug *m'*, as shown in Fig. 5, which may be turned into or out of said spring more or less as desired.

The upwardly projecting arm of lever P is formed with a series of holes, as shown in Fig. 3, and by shifting the attachment of chain *o*

up or down, the leverage of the driver's weight, or the draft of the team tending to lift the outer end of the finger bar, may be increased or decreased.

5 Referring to Figs. 7 and 8, showing a modification of the seat support and draft connections designed to utilize the draft of the team alone for sustaining the cutting apparatus, K' represents the seat support, which in this
10 case is cast with or rigidly attached to the tubular portion α of the frame. A rod or shaft L', supported and capable of turning in bearings between and parallel with said seat support and frame, is provided with a
15 depending arm l, with which the draw bar q is connected, and with an upwardly projecting arm l' with which the spring M is connected. A dog l² pivoted to the frame, is arranged to be turned into engagement with a
20 shoulder on arm l' and lock the same rigidly with said frame, so as to prevent whenever it is desired, the operation of the draft connections upon the cutting apparatus. T is the
25 tilting lever, which is connected by a rod t with an upwardly projecting arm j' on the sleeve of yoke J, for the purpose of tilting the finger bar or turning it on an axis in the direction of its length. This lever is fulcrumed
30 to the depending arm or bracket with which the rear end of the push bar is connected, and is provided with the usual latch, which works with a quadrant t', formed with or attached to said arm or bracket. The seat support K is constructed to serve as a foot rest,
35 as clearly shown in Fig. 2.

Referring to Figs. 9 to 11 inclusive, illustrating a modification of the seat support and draft connection, whereby the range of independent movement of the seat on its hinge
40 connection with the frame and its leverage on the cutting apparatus are reduced, K² is the seat support, which is hinged or pivoted by ears formed thereon to corresponding ears α^3 α^3 formed on the tubular portion α of the
45 frame, parallel with the axle C. U is a casting pivoted on a line parallel with the axle C to ears α^4 α^4 on the frame below the seat support and formed with depending ears or arms u u, which are connected by a link l⁴
50 with the rearwardly projecting attachment plate of the seat support. It is also formed with an upwardly projecting arm u' with which the spring M is connected, and a downwardly projecting arm u² with which the
55 draft bar q is connected. The yielding or elastic connection afforded by the spring M prevents the transmission of abrupt movements or vibrations from the finger bar to the seat and draft bar, or vice versa, when the
60 machine is passing over rough or uneven ground. The finger bar is thus carried more steadily and the seat is caused to ride more comfortably and with greater safety to the driver, as any sudden drop of the finger bar
65 when it passes over an abrupt depression, will not be transmitted to the seat. Besides, when the main wheels run into holes, pro-

ducing a sudden and violent depression of the seat, the increased draft exerted through the draft bar in drawing the machine out of
70 such holes, is applied to the support of the cutting apparatus just at the time when the recoil of the seat relieves it of the driver's weight and would otherwise allow it to drop.

Various other changes in minor details of
75 construction and arrangement may be made within the intended scope of my invention.

I claim—

1. In a mowing machine, the combination with the draft connection of an elastic lifting connection between it and the cutting apparatus whereby the draft of the team tends to sustain the weight of the cutting apparatus, throughout its entire length without communicating abrupt variations or movements
80 from one to the other substantially as and for the purposes set forth.

2. In a mowing machine, the combination of the seat movably connected with the frame, and an elastic lifting connection between it
85 and the cutting apparatus whereby the weight of the driver tends to sustain the weight of said cutting apparatus, without communication of abrupt movements from one to the other substantially as and for the purposes
90 set forth.

3. In a mowing machine, the combination of the cutting apparatus and a seat and draft connection movably connected with the machine and having an elastic lifting connection with said cutting apparatus whereby the weight of the driver and the draft of the team both tend to sustain said cutting apparatus, without communication of abrupt variations or movements from one to the other
105 substantially as and for the purposes set forth.

4. In a mowing machine, the combination of the seat movably connected with the frame, a lifting quadrant or lever pivoted to a suitable support on the machine above the cutting apparatus with which it is connected,
110 and a spring connection between said quadrant or lever and the seat, substantially as and for the purposes set forth.

5. In a mowing machine, the combination
115 of the seat hinged to the frame of the machine, an arm connected with the seat, a lifting quadrant or lever pivoted to a suitable support above the cutting apparatus with which it is connected, and a spring connecting said quadrant or lever with said arm, substantially as and for the purposes set forth.
120

6. In a mowing machine, the combination with the cutting apparatus of a lever having two arms and fulcrumed to the frame, a draw
125 bar connected with one arm and an elastic lifting connection between the other arm and the cutting apparatus, substantially as and for the purposes set forth.

7. In a mowing machine, the combination
130 with a seat hinged to the frame, a lever comprising two arms fulcrumed to the frame and connected with said seat, a lifting quadrant or lever connected with the cutting appara-

tus, a spring connecting said quadrant or lever with one of said arms, and a draw bar connected with the other arm, substantially as and for the purposes set forth.

5 8. In a mowing machine, the combination with the cutting apparatus, of a seat hinged to the frame and having lifting connections with said cutting apparatus, and a dog arranged to lock said seat rigidly with the
10 frame, substantially as and for the purposes set forth.

9. In a mowing machine, the combination with the cutting apparatus, of a lever fulcrumed to the frame and having a counterbalancing connection with one arm, a lifting
15 quadrant pivoted to the machine above the cutting apparatus, a spring connecting said quadrant with the other arm of said lever, a lifting lever and an angular lever fulcrumed
20 to the periphery of the lifting quadrant and connected with said lifting lever and with the cutting apparatus, said angular lever being arranged by engagement with the periphery of the lifting quadrant to limit the ex-
25 tension of said spring and the descent of the cutting apparatus, substantially as and for the purposes set forth.

10. In a mowing machine, the combination with the cutting apparatus, of a seat support
30 hinged to the frame, the seat adjustably attached to said support, and an elastic lifting connection between said support and said cutting apparatus, substantially as and for the purposes set forth.

35 11. In a mowing machine, the combination with the cutting apparatus, of a seat support hinged to the frame and constructed and arranged to form a foot rest and an elastic sustaining connection between said cutting ap-
40 paratus and seat support, substantially as and for the purposes set forth.

12. In a mowing machine the combination with an internal driving gear, a driving shaft
45 having at one end a pinion arranged to mesh with said internal gear and at the other end

a bevel gear, a driven shaft provided with a bevel gear or pinion arranged to mesh with the bevel gear on said driving shaft, and means of simultaneously shifting said driv-
50 ing shaft sidewise and endwise, whereby the pinion thereon is moved out of engagement with the internal driving gear and the bevel driving gear out of engagement with the driven bevel gear or pinion, substantially as
55 and for the purposes set forth.

13. In a mowing machine, the combination with an internal driving gear, a drivingshaft provided with a pinion arranged to mesh with said driving gear and provided with a bevel
60 gear, a driven shaft provided with a bevel gear or pinion arranged to mesh with the bevel gear on the driving shaft, an eccentrically bored oscillatory sleeve in which said driving shaft is supported, a sleeve carried
65 by the frame and encircling said oscillatory sleeve, and an arm fixed to the oscillatory sleeve and projecting outwardly therefrom through an inclined slot in the fixed sleeve, substantially as and for the purposes set forth.

14. In a mowing machine, the combination
70 with the finger bar loosely connected with the frame of the machine by the coupling bar, of a seat support having a hinge or pivotal connection with said frame, a lifting quadrant
75 pivoted to the machine above the cutting apparatus and connected by a spring with said seat support, a bell crank lever fulcrumed to the coupling bar and having one of its arms connected with said lifting quadrant, and a
80 lever connected with the other arm of said bell crank lever and with the inner end of the finger bar, substantially as and for the purposes set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two
85 witnesses.

JOHN W. LATIMER.

Witnesses:

CHAS. L. GOSS,
E. H. BOTTUM.