(No Model.) 7 Sheets—Sheet 1.

S. L. McCOLLOCH.

MOWING MACHINE.

No. 497,055. Patented May 9, 1893.

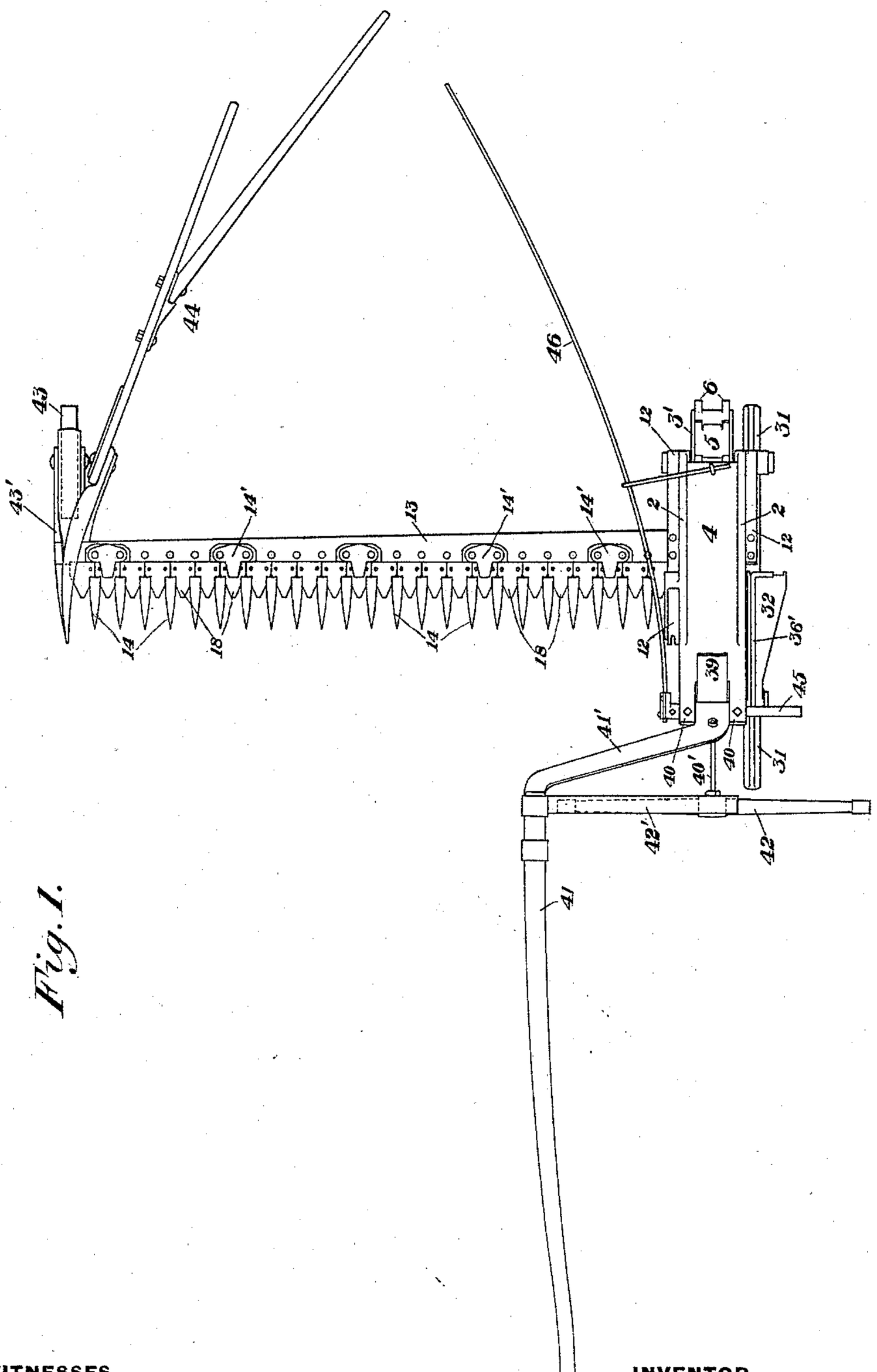


Fig. 1.

WITNESSES

Thomas W. Bakewell.

W. B. Corwin

INVENTOR

Simon L. McColloch

(No Model.)

7 Sheets—Sheet 2.

S. L. McCOLLOCH.

MOWING MACHINE.

No. 497,055.

Patented May 9, 1893.

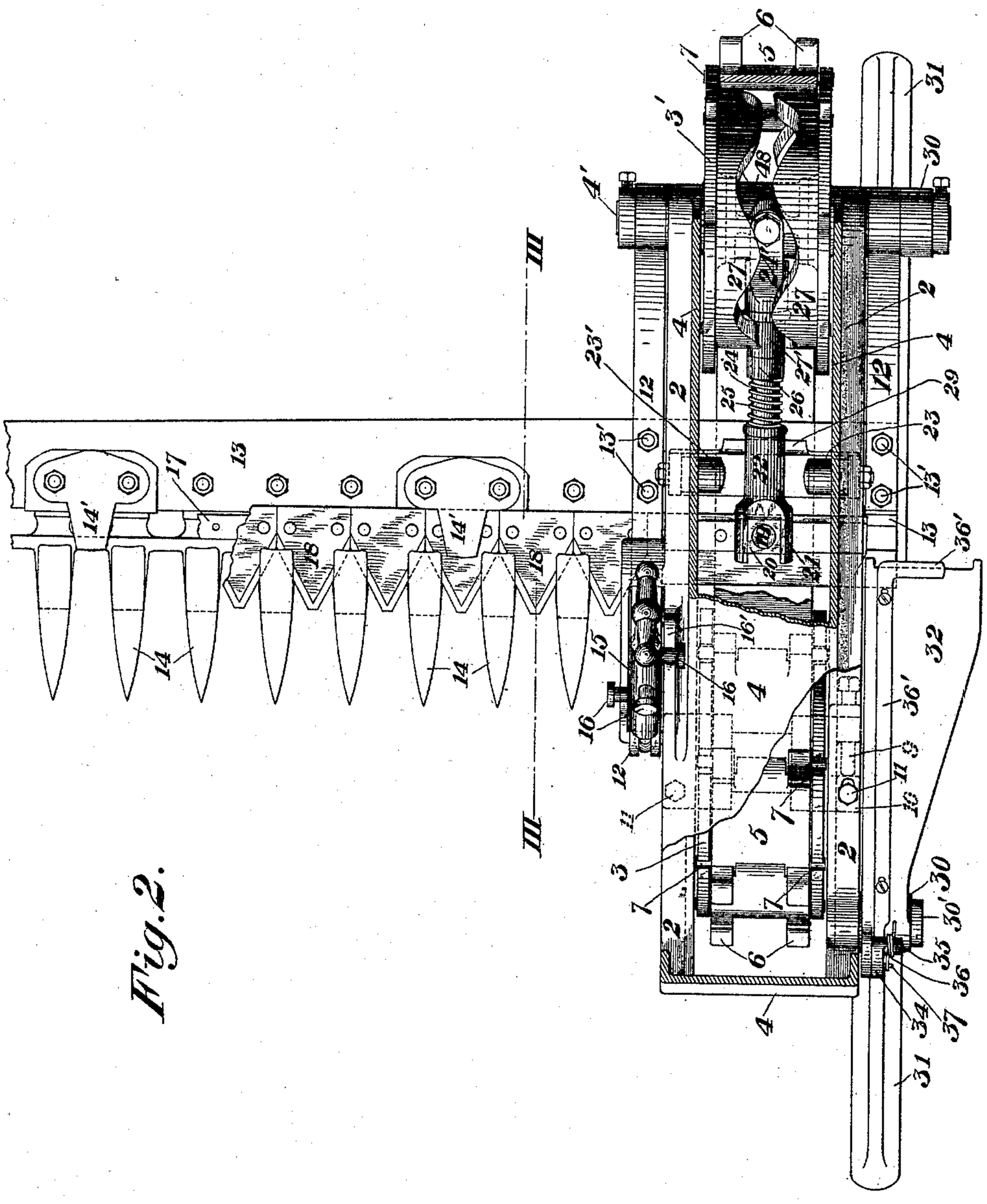


Fig. 2.

WITNESSES

Thomas W. Bakewell

W. B. Corwin

INVENTOR

Simon L. McColloch

(No Model.)

7 Sheets—Sheet 3.

S. L. McCOLLOCH.

MOWING MACHINE.

No. 497,055. Patented May 9, 1893.

Fig. 3.

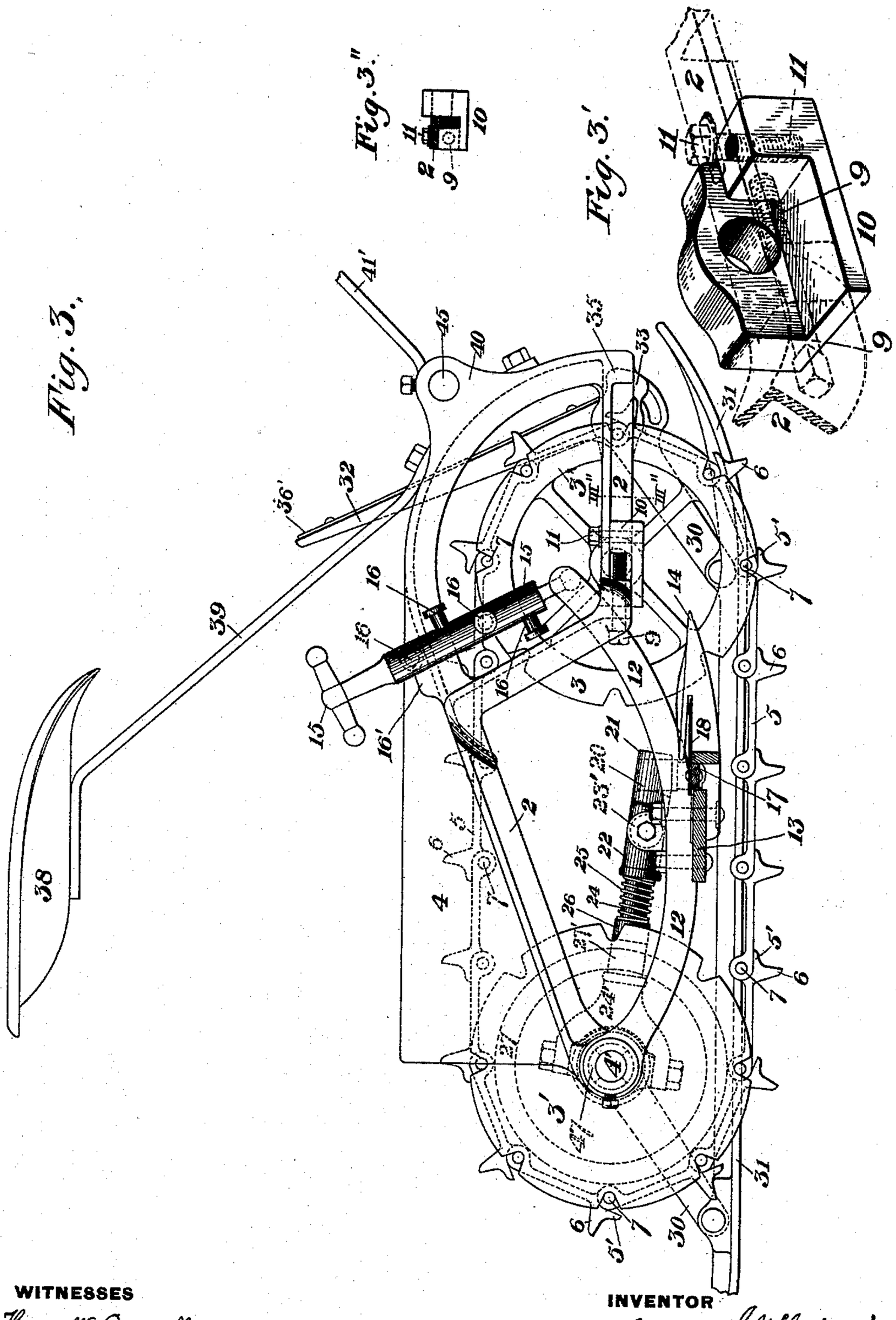


Fig. 3'.

Fig. 3".

WITNESSES

Thomas W. Bakewell

W. B. Corwin

INVENTOR

Simon L. McColloch

(No Model.)

7 Sheets—Sheet 4.

S. L. McCOLLOCH.

MOWING MACHINE.

No. 497,055. Patented May 9, 1893.

Fig. 5.

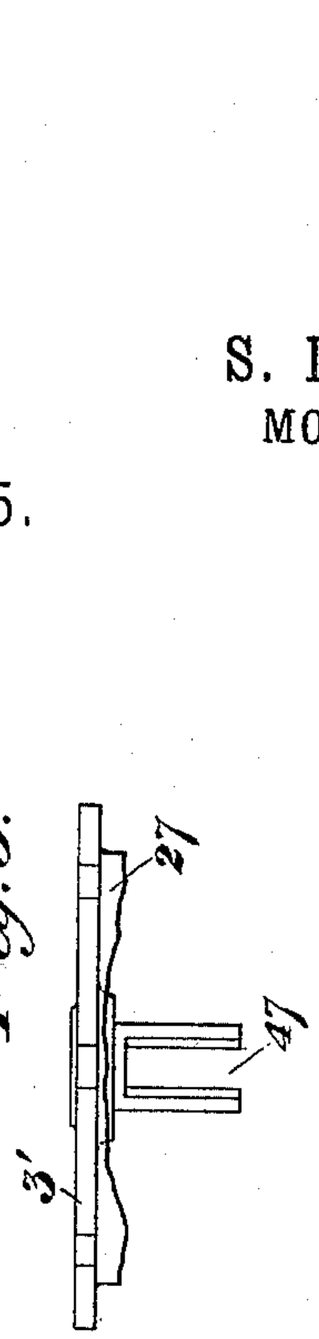
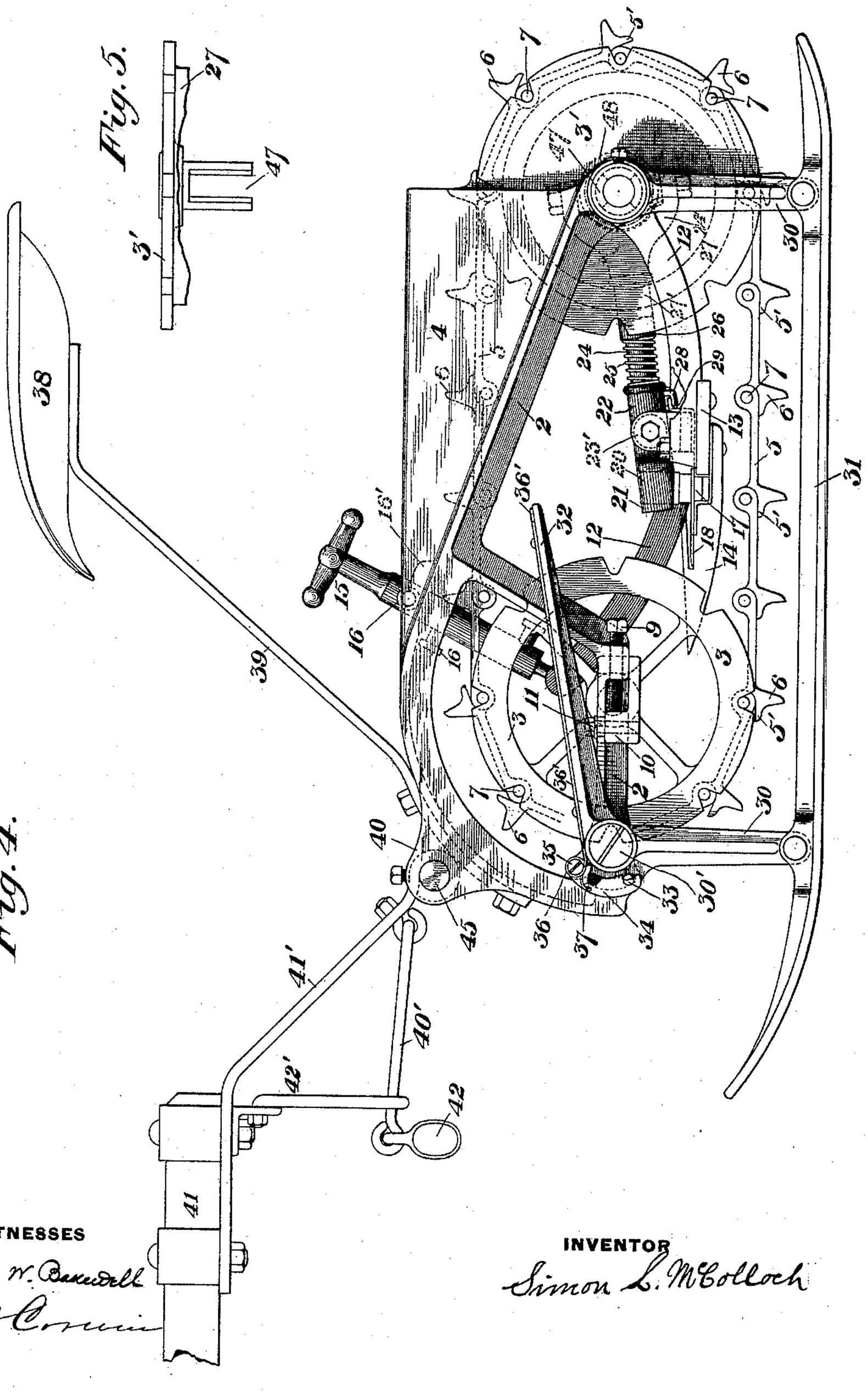


Fig. 4.



WITNESSES

Thomas W. Bakewell

W. B. Corwin

INVENTOR

Simon L. McColloch

(No Model.)

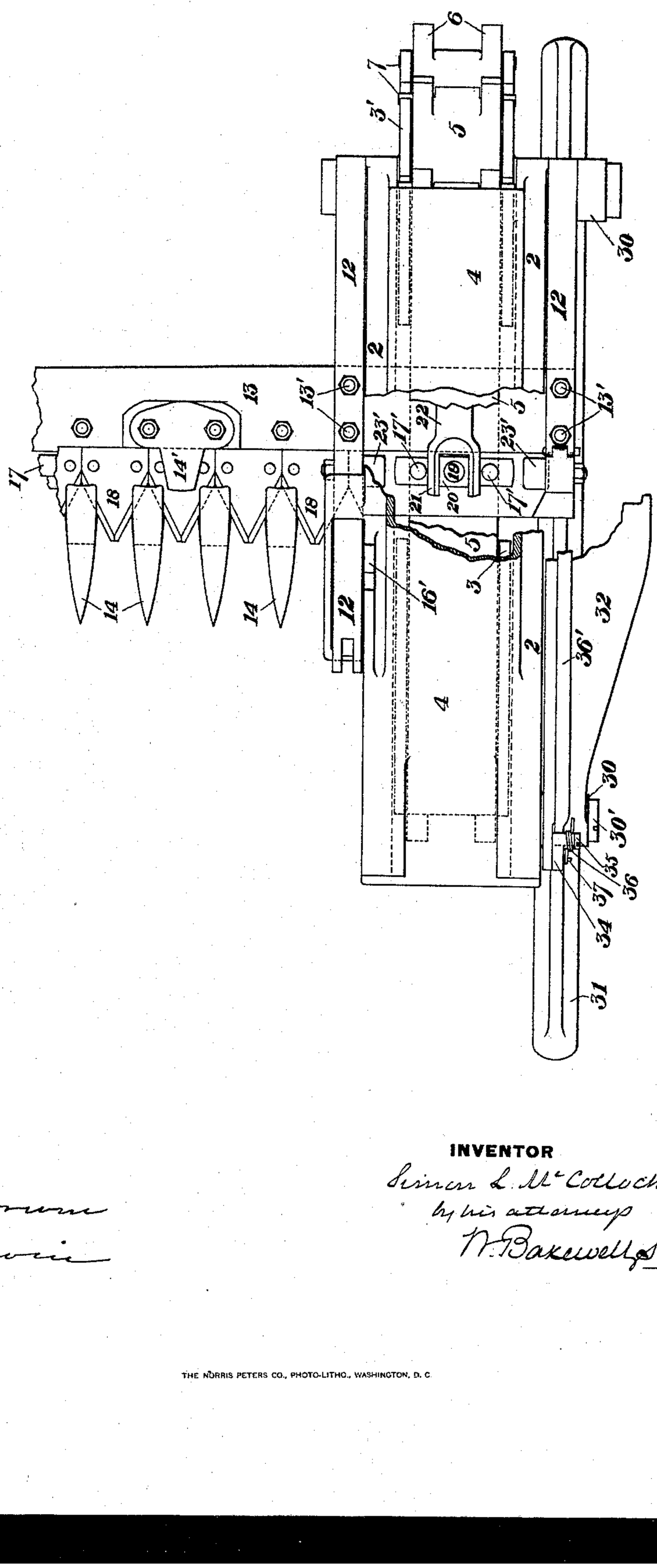
7 Sheets—Sheet 5.

S. L. McCOLLOCH.

MOWING MACHINE.

No. 497,055. Patented May 9, 1893.

Fig. 6.



WITNESSES

S. L. McCollum

W. B. Corwin

INVENTOR

Simon L. McCulloch

by his attorneys

T. Bakewell & Sons

(No Model.) 7 Sheets—Sheet 6.

S. L. McCOLLOCH.

MOWING MACHINE.

No. 497,055. Patented May 9, 1893.

Fig. 7.

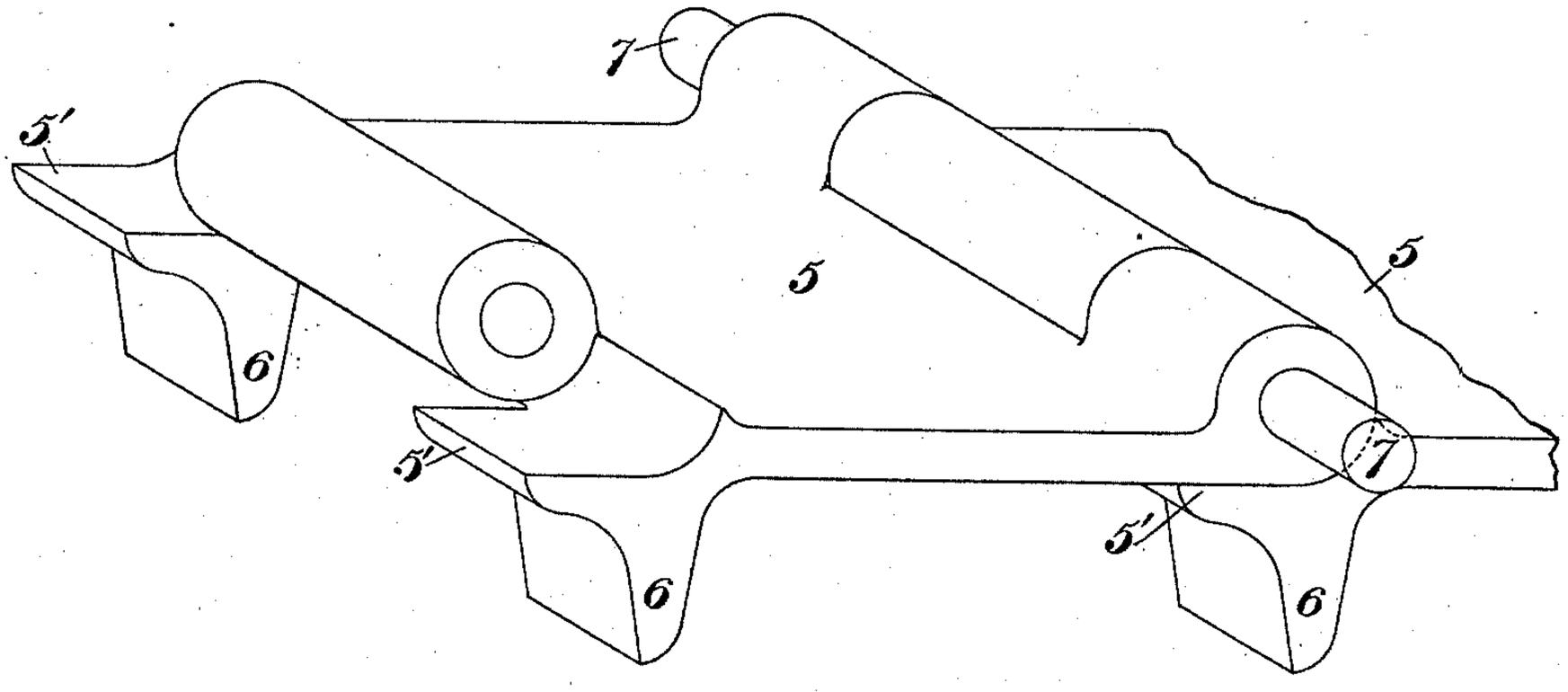
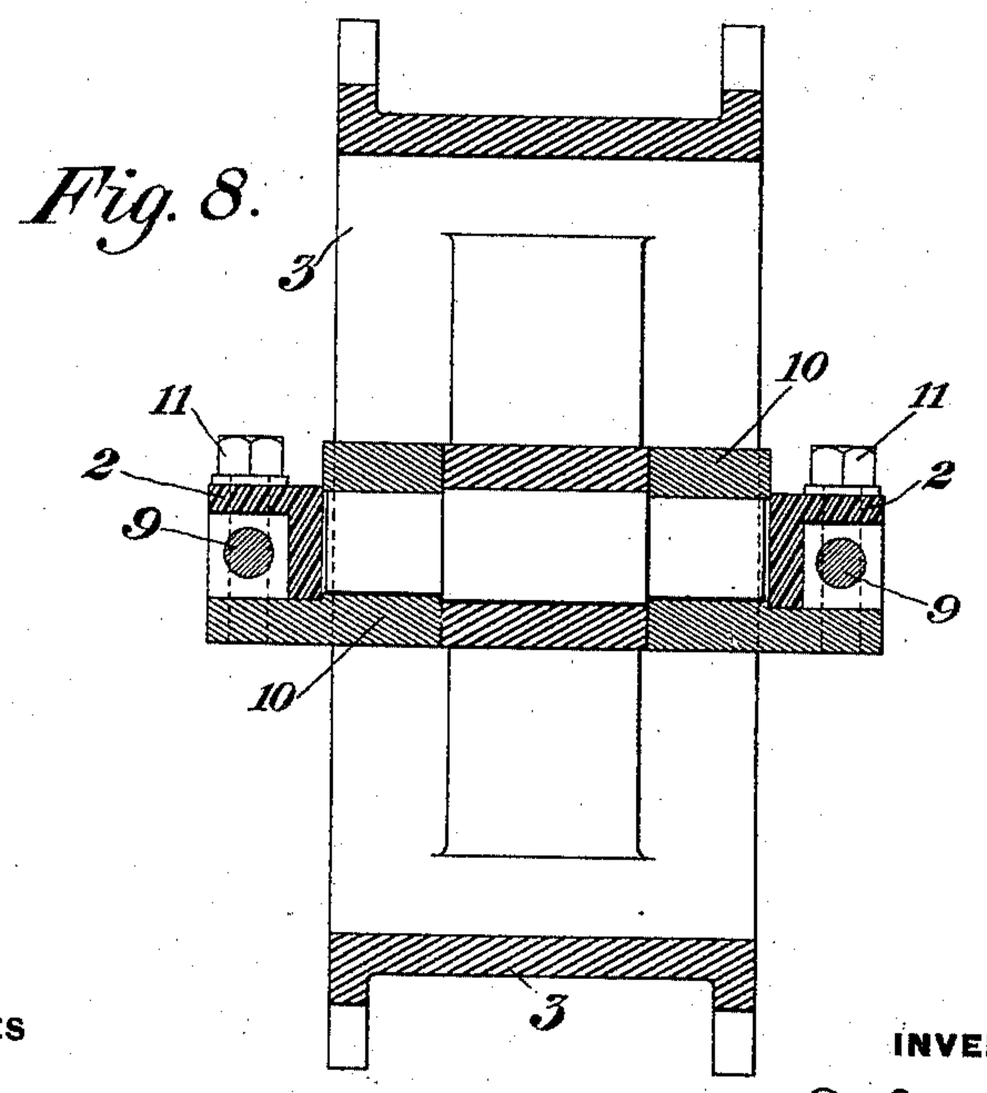


Fig. 8.



WITNESSES

N. M. Corwin

W. B. Corwin

INVENTOR

S. L. McCulloch

by W. Baxendell & Sons

his Attorneys.

(No Model.) 7 Sheets—Sheet 7.

S. L. McCOLLOCH.

MOWING MACHINE.

No. 497,055. Patented May 9, 1893.

Fig. 9.

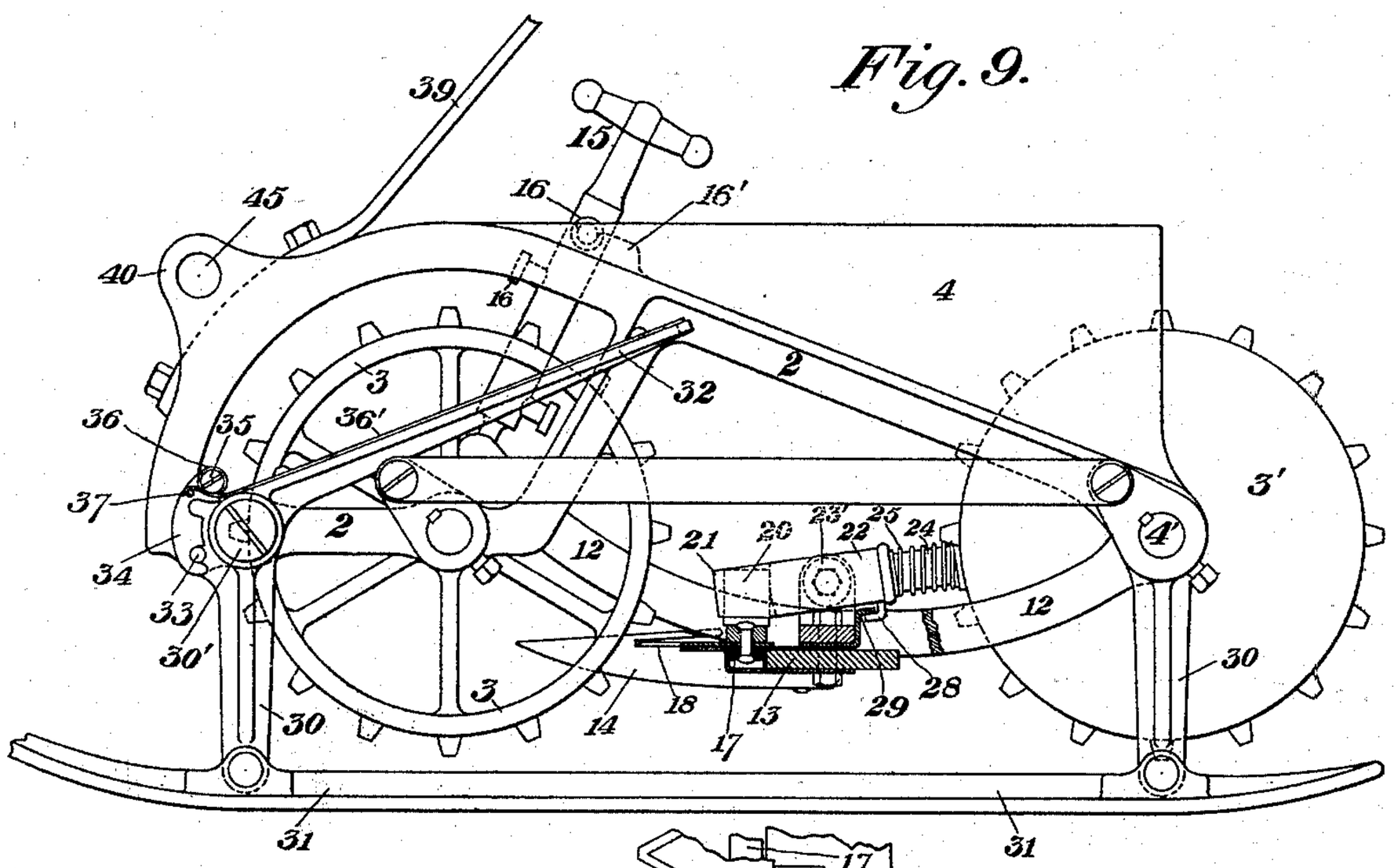
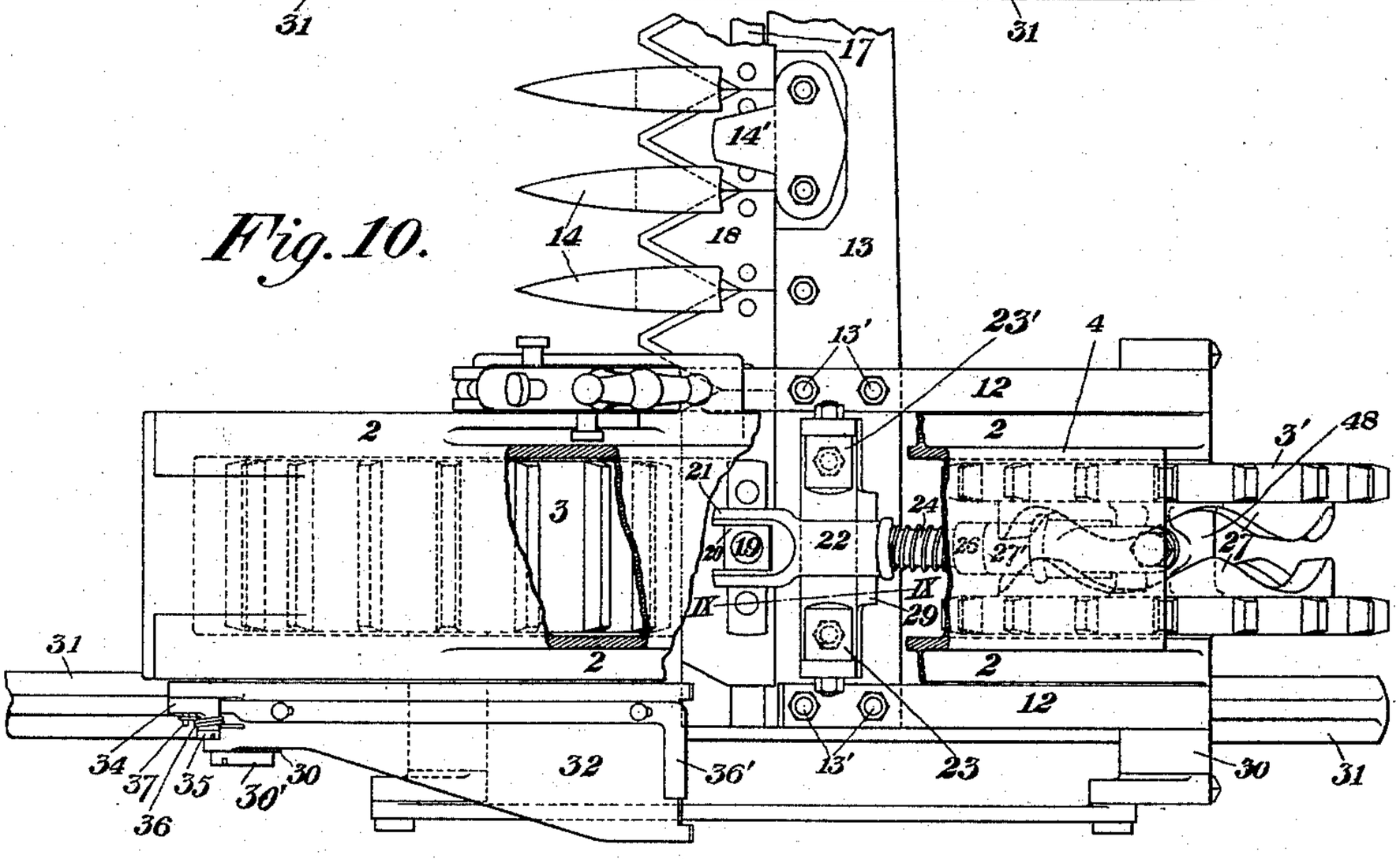


Fig. 10.



WITNESSES

S. M. Corwin

W. B. Corwin

INVENTOR

S. L. McColloch

by W. Baxendall & Sons

his Attorneys.

UNITED STATES PATENT OFFICE.

SIMON L. McCOLLOCH, OF WHEELING, WEST VIRGINIA.

MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 497,055, dated May 9, 1893.

Application filed August 7, 1891. Serial No. 402,001. (No model.)

To all whom it may concern:

Be it known that I, SIMON L. McCOLLOCH, of Wheeling, in the county of Ohio and State of West Virginia, have invented a new and useful Improvement in Mowing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of my improved mowing machine, the seat and part of the seat-support being omitted for clearness of illustration. Fig. 2 is a similar view on a larger scale, showing part only of the finger-bar and knives, the top-plate of the frame being broken away to expose the operative mechanism to view. Fig. 3 is a sectional side elevation of the inner side of the machine, the section being in vertical plane on the line III—III of Fig. 2. Fig. 3′ is a perspective detail view of one of the blocks 10, showing by dotted lines a portion of the frame 2 in cross-section. Fig. 3″ is a sectional view on the line III″—III″ of Fig. 3, showing the relation of side bars 2, and block 10. Fig. 4 is an elevation of the outer side of the machine. Fig. 5 is a detail view, illustrating the construction of the driving wheel. Fig. 6 is a partial plan view, showing a modified construction of device for cushioning the knife. It is the form shown in Fig. 6 that is specifically claimed herein. Fig. 7 is a perspective view of a link of the driving-chain which I employ. Fig. 8 is a vertical cross sectional view through the front wheel, showing the sliding-bearing therefor. Fig. 9 is a side elevation of a modified form wherein a connecting rod is employed for the driving-wheels, the parts being broken away to show the finger-bar and connections. Fig. 10 is a top plan view of the same with the casing broken away to show the arrangement of the buffers.

Like symbols of reference indicate like parts in each.

The object of my invention is to provide a machine for cutting grass or grain, which, while preserving all the efficiency of prior machines, shall be very light and compact in structure, enabling it to be drawn and operated by one horse, instead of the two horses ordinarily required for other machines of like capacity.

The operation and advantages of the machines will be described generally in this specification.

The frame of the machine is preferably an integral casting, and comprises parallel side-bars 2, which extend from the sides of the rear wheel 3′ to and in advance of the front wheel 3, and which between said wheels are of inverted V-shape affording an intermediate upwardly extending cavity, the purpose of which is to permit vertical adjustment and lift of the finger-bar as hereinafter explained. The frame also comprises a top-portion or guard 4, which is preferably integral with the side bars 2 covering the main part of the machine, extending over the front wheel 3 and forming a base for the support of the driver's seat, as shown in Figs. 3 and 4.

The main wheels of the mowing machine are two in number, and instead of being set side by side are arranged in tandem, one in front of the other. They have broad peripheries and serve as means for supporting the machine, and one of them, which may be either the front or rear wheel serves to transmit the power directly to the cutting mechanism.

In machines as heretofore constructed, in order that the power supplied by traction may be sufficient to operate the cutters, it has been found necessary to make the machine of considerable weight, for, otherwise, in doing heavy work, the wheels might slip idly on the ground. I effect the desired result, not by increasing the weight of the machine, but by increasing the number and efficiency of the devices by which the hold of the wheels on the ground is secured. Thus, instead of using the traction of the wheels alone, I provide the wheels with peripheral spurs or notches made on marginal flanges of the wheels in the manner of a sprocket, and connect the wheels with a spurred sprocket-chain 5, which passes around the wheels between the marginal flanges thereof and forms a continuous track on which the wheels travel. The links of the chain are connected by pins 7, adapted to fit in the sprocket notches, and each link has

outwardly projecting spurs 6 and shoulders 5′, which normally engage the adjacent link and thus prevent inward bending or sagging of the chain, rendering it when lying on the ground substantially rigid.

Instead of providing the chain with pins which engage notches in the wheel, I may provide the wheel with pins or teeth adapted to engage the links. I may also dispense with the chain entirely, using cranks upon each driving-wheel and a connecting rod joining them as shown in Fig. 9, spurs being employed upon the wheels.

Fig. 3 shows the machine when the parts are in position to transmit power to the cutting mechanism. Then the lower branch of the chain lies flat on the ground, and as the machine is drawn forward by the horse, the wheels travel on the chain, forcing the spurs in the ground and effectually preventing slipping. I thus get the joint driving action of the two wheels, plus the positive action of the spurred chain.

Within the scope of my invention, broadly considered, the construction may be modified so that the tandem wheels are connected otherwise than by a sprocket-chain, *e. g.* by a connecting rod. The rear wheel 3′ is journaled in stationary bearings in the frame 2. The front wheel is journaled in longitudinally adjustable bearings, enabling the tension of the sprocket-chain to be varied. Said bearings are constituted by blocks 10 mounted on sliding seats on horizontal portions of the side-bars of the frame 2, and arranged in connection with adjusting bolts 9 which pass through parts of the frame and bear on the blocks.

11, 11, are lock-bolts which pass through the bearing-blocks and through slots in the frame.

I shall now describe the means employed for supporting and adjusting the finger-bar. Pivoted to the ends of the axle 4′ of the driving-wheel 3′, are downwardly curved levers or bars 12, to which the horizontal finger-bar 13, carrying the usual slotted fingers or guards 14 and spring clips 14′, is secured by bolts 13′. The knife-back 17 carrying the knives 18 is set on a seat on the finger-bar and is adapted to reciprocate longitudinally and to move the knives between the guards, in conjunction with which they act to shear off the grass or grain. The outer end of the finger-bar is supported by a carrying-wheel 43, which forms the third supporting wheel of my tricycle machine. Said wheel is journaled to a shoe 43′ which extends rearwardly from the finger-bar. The bar 12 at one side of the machine terminates at the position of the knife, so as to afford no obstruction to the longitudinal removal of the latter from the finger-bar, and the other bar 12 extends farther to the front of the machine through a vertical guide-slot in the upright part of the machine-frame, and is connected by a ball and socket joint to a lift-rod or handle 15 extending above the machine frame in convenient proximity to the driver's seat, and arranged so that on moving it up or down the bars 12 shall be swung radially on the axis 4′, thus raising the finger-bar from the ground or lowering it as the case may be. The slot in the frame through which the bar 12 passes serves as a brace for the bar and its supported parts, bracing them against side strain. By these means the finger-bar can be raised to bring it well above the surface of the ground, the recessed shape of the frame 2 permitting considerable upward motion, or by adjusting it at different points the height of the cut can be varied, or by depressing it to a low point, the radial support of the bar 12 causes the fingers to assume a downwardly-inclined direction, adapting them to cut lodged or beaten down grass. These three different adjustments, which in my machine are effected by a single device, are in prior machines effected only by several devices and with considerable trouble. The axial line of the carrying-wheel 43 is substantially in the axial line of the wheel 3′ on which the supporting bars 12 swing. The consequence is that on swinging these bars to change the vertical position of the finger-bar, the wheel 43 is not raised from the ground and the finger-bar is lifted and maintained in longitudinally horizontal position.

The arrangement of the carrying wheel constitutes an important feature of my invention. It will be understood that a shoe or runner can be substituted for the wheel.

In order to hold the lift-bar in the vertical position to which it is adjusted, I provide it with pins 16 arranged alternately at different sides of the bar, and form on the machine-frame a seat or shoulder 16′ adapted to receive one of the pins and to uphold the lift-bar. If the bar be lifted until one of the pins be above the shoulder and turned to cause the engagement of the latter parts, the bars 12 and finger-bar will be upheld, and yet there will be nothing to prevent free lifting thereof if the finger-bar should strike an obstruction in the field. The lowest position of the finger-bar is when the bar 12 rests at the end of the slot in the frame 2.

I shall now describe the means by which reciprocatory motion is communicated to the knife. Near its inner end, within the limits of the frame 2, it is provided with an upright cylindrical pin or post 19, on which is fitted a squared bearing-block 20, which fits within a fork 21 at the end of a sleeve 22, set on a vibratory lever 24 and capable of some longitudinal motion thereon. A constant forward pressure is exerted on the sleeve 22, to keep the base of the fork pressed against the pin 19 by means of a spring 25, interposed between the sleeve, and a collar 26 on the lever. The base of the fork is preferably curved convexly, as shown in Fig. 4. The effect of the forward pressure of the sleeve upon the pin is that it tends to tip the knife forward

on its longitudinal axis, thereby keeping the knife-blades in neat contact with the bases of the slots in the guards, and causing them to work in cutting with a true shearing action. This feature of my improvement is of great practical importance, and I believe I am the first to apply to the knife a tipping tension toward the opposing cutting edge of the guard.

To make clear the manner in which the lever 24 is vibrated, I must first explain the preferable construction of the rear-wheel 3′. (See Figs. 2, 3, 4 and 5.) Said wheel is composed of two symmetrically-shaped halves, each of disk form having a lateral inwardly projecting annular flange 27 with a margin of zig-zag or serpentine form. Said disks have at their hubs inwardly projecting clutch-forks 47 (Fig. 5), and when the parts are placed together on the axle 4′, the forks fit together and operatively connect the disks, as shown by dotted lines in Fig. 4. The forks are encircled by a loose sleeve 48. The parts when thus adjusted constitute a wheel having a marginal slot of serpentine form, which constitutes a cam and exposes the sleeve which encircles the axle and clutch-forks.

The end of the lever 24 is formed with a fork 24′, which is pivotally pinned or bolted to opposite sides of the sleeve 48, and a roller 27′ on the lever fits between the opposite cam-faces of the flanges 27. It will be apparent, therefore, that when the wheel 3′ rotates, the action of the cam-faces on the roller 27′ will cause the lever to vibrate on the axis of the fork 24′, and the outer end, acting on the sliding-block 20 and its inclosed pin 19, will cause the knife to reciprocate on the finger-bar. In order to prevent the lever from upward displacement, I form on the sleeve 22 a lip 28 which fits under a corresponding flange 29 on the finger-bar. (Fig. 4.) If it is desired to disconnect the lever from the knife and to remove the latter from the machine, the sleeve 22 is drawn back until the lip and flange are disengaged. The lever is then lifted above the pin 19, thus freeing the knife which can be drawn out longitudinally.

In order to cushion the operation of the lever and knife, I set on the levers 12 or on the finger-bar, elastic cushions or buffers 23′ (Fig. 6), with which studs 17′ on the knife come in contact at the ends of the strokes, thus preventing injurious jar on the knives and the operating parts, and rendering the machine as nearly noiseless in its action as possible. The buffer at the outer side is preferably pivoted or otherwise removably set in place, so that it may be lifted when the knife is to be drawn out. This location of the buffers, so that they shall directly cushion the knife and shall indirectly also cushion the action of the lever and cam, is claimed specifically herein. In Fig. 2, I show the buffers arranged opposite the lever. This position is not so desirable, in that the direct action on the knife is lacking and there are apt to be loose motion and shock to the parts at the pivotal connection of the fork 21 and sliding block 20.

The construction of the cam may be varied within the scope of my invention. Thus the lever may be pivotally connected on the axial line of the driving-wheel by double forks at the sides of the wheel, in which case a simple cam-groove on the wheel would suffice to vibrate the lever, and other changes will be suggested to the skilled mechanic.

The pivotal connection of the operating lever at the axial line on which swing the bars or frame carrying the finger-bar (which need not be the axial line of the driving-wheel but may be of a supplemental wheel or shaft) constitutes a marked improvement.

In prior machines, when the pitman which reciprocates the knife extends from a different center from that on which the finger-bar turns, the act of lifting the finger-bar to vary the height of cut, or the raising of one of the finger-bar-wheels in passing over uneven ground, changes the relative positions of the knife and pitman relatively to the guards, so that the knives when in middle position are not exactly at the middle points between the guards. The consequence is that in order to cause the points of the knives always to move to the guards, the length of stroke of the knife must be made greater than otherwise necessary, resulting, of course, in waste of power and at the expense of the rapidity of action of the machine. With my construction this does not occur, since the operating lever moves on the same axis as that of the motion of the finger-bar, the relative positions are constant, and I am therefore enabled without difficulty to shorten the stroke of the knife, so that it shall be sufficient only to cause the points of the knives to move between the edges of the adjacent guards. By having the parts of the machine operating thus from a common center, the machine is more compact, its action is uniform, the jar and vibration of the parts are reduced to a minimum, and there are less parts which can wear or become loose from continued use.

In order to make it possible to draw the machine over the ground without rotating the wheels and operating the cutting mechanism, I employ a runner or other suitable device, such as a wheel-frame, which normally is elevated so as not to prevent the bearing of the wheels and sprocket-chain on the ground, but which can be depressed so as to bear on the ground and carry the weight of the machine, and to elevate the running gear so that the traction of the machine shall not operate the same. A convenient form and arrangement of said runner is shown in the drawings. The runner consists of a bar or shoe 31, pivotally suspended by links 30 to the axle of the rear wheel and to an axle 30′ at the front portion of the frame, respectively. The front link 30 is fixed to or made integral with a foot-lever 32, which constitutes with the link a bell-crank. By depressing said lever 32, the shoe

31 is forced down to bear upon the ground, as shown in Fig. 4. By elevating the foot-lever, the shoe is raised above the ground, as represented in Fig. 3.

In order to lock the shoe in the position required, I employ the following device:—34 is a pawl which is pivoted at 35 on the elbow of the bell-crank 30, 32, and is provided with suitable notches adapted to engage a pin 33, which is fixed to the machine frame and projects through a circular slot in the bell-crank. The pawl is forced against the pin 33 by a spring 36, which bears on a stud 37 on the pawl, so that when the links 30 and the shoe 31 are adjusted in desired position and the pawl is in engagement by a notch with the pin 33, the parts are firmly held in place. To disengage the pawl from the pin 33 I employ a sliding rod 36′, which is mounted on the foot-lever, and at its forward end bears on the pawl. To disengage the pawl, the driver places his foot on a projecting portion of the rod 36′, and forces it forward so as to release the pawl from the pin.

The driver's seat 38 is fixed to the upper end of a support 39, which is secured to the machine-frame.

The arrangement for hitching the horse to the machine is shown in Fig. 1. I employ a single shaft 41 situate at the inner side of the machine and connected by a transverse extension 41′ to the machine-frame between lugs 40 thereon. The singletree 42 is hung to a rod 42′, which extends transversely from the shaft and is connected in the machine-frame by a link 40′. The line of draft is therefore at the center of the machine. By employing only a single shaft and leaving the horse unconfined by a shaft at the left side, the animal can turn more freely and the machine can be guided to much better advantage.

With my improved machine, I am enabled to deliver the cut grass or grain in a line, so that the horse in cutting the next swath shall not trample upon the already cut grass. For this purpose, I employ at the outer end of the finger-bar a rearwardly inwardly extending grass-board 44, and to the inner end of the pin 45, which forms the axis of attachment of the shaft, I attach a fender-rod 46, or a grass-board similar to the grass board 44 may be substituted therefor. These two parts 44 and 46, converging at the rear of the machine, heap the grass in a line, stacking it with its tops uppermost, so that not only shall it be out of the path of the horse and machine at the next cut, but also so that because of the freer access of light and air, it shall be more quickly dried and cured.

The advantages of my invention will be appreciated by those skilled in the art. The machine is light, strong, durable and efficient. By dispensing with the necessity of the usual heavy wheels and frame work of prior machines, I obtain a machine of a new class and of greatly improved character.

Many of the claims refer to items of invention not limited to their application to a tandem-wheel machine, but applicable to machines differently constructed.

I claim as my invention—

1. In a mowing machine, the combination with a finger bar and a vertically movable support carrying the same, of a rigid main frame independent of said support, and situate directly above the finger-bar, said frame having an upwardly extending recess to permit vertical motion of said parts; substantially as and for the purposes described.

2. In a mowing machine, the combination with the finger-bar, of a finger-bar support extending lengthwise of the machine and movable in a vertical direction, a lifting and adjusting rod freely movable upwardly, and stops adapted to hold the finger-bar from descending; substantially as and for the purposes described.

3. In a mowing-machine, the combination with the finger-bar, of a finger-bar support extending lengthwise of the machine and movable in a vertical direction, a lift rod at one end of the support, and means for supporting said rod in different positions, said rod being freely movable upwardly; substantially as and for the purposes described.

4. A mowing-machine, having but two main frame-supporting and driving wheels arranged in tandem and mechanically connected so as to combine the tractive forces of the two wheels, a finger-bar and reciprocatory knife located in a line which passes between the wheels, and a power-connection, connecting the knife with one of the wheels; substantially as and for the purposes described.

5. A mowing-machine, having all its main frame supporting driving wheels arranged in tandem and mechanically connected, so as to combine the tractive forces of the said wheels, a finger-bar and knife, supports radially supporting the finger-bar from the axis of one of said wheels, and a power-connection connected with the knife and deriving its power from the wheel; substantially as and for the purposes described.

6. In a mowing-machine, the combination with a finger-bar having supporting-arms rigidly attached thereto at the machine-end and mounted pivotally on an axis tranverse to the machine, said bar being freely movable upwardly by obstruction in the field independently of the machine-frame, of a carrying support or wheel at the outer end of the finger-bar and held thereby with its axis substantially in the axial line of the pivot of the supporting-arms, said outer carrying support or wheel having no axle connecting it with said machine save by the finger-bar which serves as an axle therefor, substantially as and for the purposes described.

7. A mowing machine, having all its main frame-supporting driving wheels arranged in tandem and mechanically connected, so as to combine the tractive forces of the said wheels,

a finger-bar having at the machine-end supporting-arms pivotally mounted on an axis transverse to the machine, a carrying support or wheel set at the outer end of the finger-bar and held thereby substantially in the axial line of the supporting arms, and means for lifting the finger-bar; substantially as and for the purposes described.

8. In a mowing-machine, the combination with the finger-bar and guard, of a knife having means for imparting thereto a tipping tension toward the opposing cutting edges of the guard; substantially as and for the purposes described.

9. A mowing-machine, having main frame-supporting wheels arranged in tandem and mechanically connected so as to combine their tractive forces, a finger-bar, and another support or wheel at the outer portion of the finger-bar; substantially as and for the purposes described.

10. A mowing-machine, having main frame-supporting wheels, which derive their rotary motion by the traction of the machine over the ground, said wheels being arranged in tandem and mechanically connected so as to combine their tractive forces, cutting mechanism situate at one side only of the machine and connected with and driven by said wheels, and means for the connection of the machine to power in order to draw the same and by traction to rotate the wheels; substantially as and for the purposes described.

11. In a mowing-machine, the combination of the finger-bar and guards, a knife comprising a knife-rod with knife-sections attached thereto, a spring acting on the knife at a point eccentric to its longitudinal axis and exerting on the same a tipping tension (as distinguished from a direct pressure) to force the knife-sections toward the opposing cutting edges of the guards; substantially as and for the purposes described.

12. A mowing-machine, having main frame-supporting wheels arranged in tandem and mechanically connected so as to combine their tractive forces, a rigid machine-frame carried by said wheels, a finger-bar, another support or wheel at the outer portion of the finger-bar, and means for moving the finger-bar vertically and maintaining it in substantially horizontal position; substantially as and for the purposes described.

13. A mowing-machine having supporting wheels which derive their rotary motion by the traction of the machine over the ground, said wheels being arranged in tandem and mechanically connected by an endless flexible connection which passes around the peripheries of the wheels so as to combine the tractive force of the said wheels, which are arranged with the lowest points of their peripheries in substantially the same horizontal plane, whereby a flat portion of the endless flexible connection is in contact with the ground, cutting mechanism connected with and driven by said wheels, and means for the connection of the machine to power in order to draw the same and by traction to rotate the wheels, substantially as and for the purposes described.

14. A mowing-machine having supporting wheels which derive their rotary motion from the traction of the machine over the ground, said wheels being set in tandem and mechanically connected by an endless flexible connection which passes around the peripheries of the wheels and has a flat intermediate portion in contact with the ground, said flexible connection being provided with projections adapted to enter the ground, so as to combine the tractive force of the two wheels, cutting mechanism connected with and driven by said wheels, and means for the connection of the machine to power in order to draw the same and by traction to rotate the wheels; substantially as and for the purposes described.

15. A mowing-machine having supporting wheels, which derive their rotary motion by the traction of the machine over the ground, said wheels being arranged in tandem and mechanically connected by an endless sprocket chain which passes around the peripheries of the wheels and having links provided with stops to prevent inward bending of the chain, so as to combine the tractive force of the said wheels, cutting mechanism connected with and driven by said wheels, and means for the connection of the machine to power in order to draw the same and by traction to rotate the wheels; substantially as and for the purposes described.

16. In a mowing-machine, the combination of a supporting and knife-driving wheel, means for transmitting power therefrom to the mechanism of the machine, a supplemental support, and means for lifting the first named driving-wheel from the ground and transferring the weight of the machine to the supplemental support, thereby destroying the traction of the driving-wheel and stopping the knife; substantially as and for the purposes described.

17. In a mowing machine, the combination with supporting-wheels and means for transmitting power therefrom to the mechanism of the machine, of a supplemental support, and means for depressing the supplemental support to lift the first named wheels from the ground; substantially as and for the purposes described.

18. In a mowing machine, the combination with the finger-bar and reciprocatory knife, of a post on said knife, a lever inclosing the post, means for vibrating the lever, and a lip fixed to the lever and a projection on the cutter-bar under which the lip fits detachably holding the lever in operative position; substantially as and for the purposes described.

19. In a mowing machine, the combination with the finger-bar and reciprocatory knife, of a vibratory lever, and a spring-backed

sleeve on said lever connecting it with the knife; substantially as and for the purposes described.

20. In a mowing-machine, the combination with the finger-bar and reciprocatory knife, of a post on said knife, a lever having a spring-backed sleeve inclosing the post, and means for vibrating the lever; substantially as and for the purposes described.

21. In a mowing-machine, the combination with a wheel having separated opposite peripheral cam-faces, of a vibratory lever extending through the cam slot formed by the opposing cam-faces and pivotally connected with a sleeve on the axis of the wheel, said lever bearing on said faces, and connected with the machine-knife; substantially as and for the purposes described.

22. In a mowing machine, the combination with a supporting wheel having two portions provided with corresponding cam faces and interlocking forked hubs, of a vibratory lever extending through the cam slot formed by said cam faces; substantially as described.

23. The combination with a wheel having separated opposite peripheral cam faces, of a vibratory lever extending between said faces and pivotally connected with a sleeve on the axis of the wheel, said lever bearing on said faces, and said wheel being formed of two annular parts having interlocking hubs; substantially as and for the purposes described.

24. In a mowing-machine, a finger-bar connected to radial levers, one of said levers extending past the connecting point, and a handle-bar pivoted to such extension; substantially as and for the purposes described.

25. In a mowing-machine, the combination of a finger-bar carried by an upwardly-movable support, a rotary lift-bar connected to said support and having upholding pins at different levels and on different lines, adapted to engage the frame and to uphold the bar at different levels; substantially as and for the purposes described.

26. A mowing-machine attachment, comprising a runner, links connecting the runner with the frame work, a foot lever extending upward from one link and means for locking said lever; substantially as and for the purposes described.

27. A mowing-machine, comprising main frame-supporting wheels, all said wheels being arranged in tandem and mechanically connected to combine their tractive forces, a finger-bar extending between said wheels, a knife connected with said tandem wheels, and a third support or wheel on the finger-bar-side of the machine; substantially as and for the purposes described.

28. A mowing-machine, comprising two driving wheels arranged in tandem, a chain passing over them, a frame work which is located over the chain and serves as a guard therefor, and cutting mechanism located between the wheels; substantially as and for the purposes described.

29. A mowing-machine attachment, comprising a runner connected by pivoted links to the frame work, a foot-lever arranged to raise and lower the runner, a pawl engaging the lever in its different positions, and a spring holding the pawl in locked position; substantially as and for the purposes described.

30. In a mowing-machine, the combination with knife-actuating wheels arranged in tandem and a lateral finger-bar, of a runner extending lengthwise of the machine, and means for transferring the weight of the machine from the wheels to the runner; substantially as and for the purposes described.

31. In a mowing machine, the combination of wheels arranged in tandem, and mechanically connected so as to combine their tractive forces a lateral finger-bar situate on a line which passes transversely between the wheels, and radial levers extending lengthwise of the machine at the sides of the wheels, pivoted at one end and secured to the finger-bar; substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 3d day of August, A. D. 1891.

SIMON L. McCOLLOCH.

Witnesses:
W. B. CORWIN,
H. M. CORWIN.