

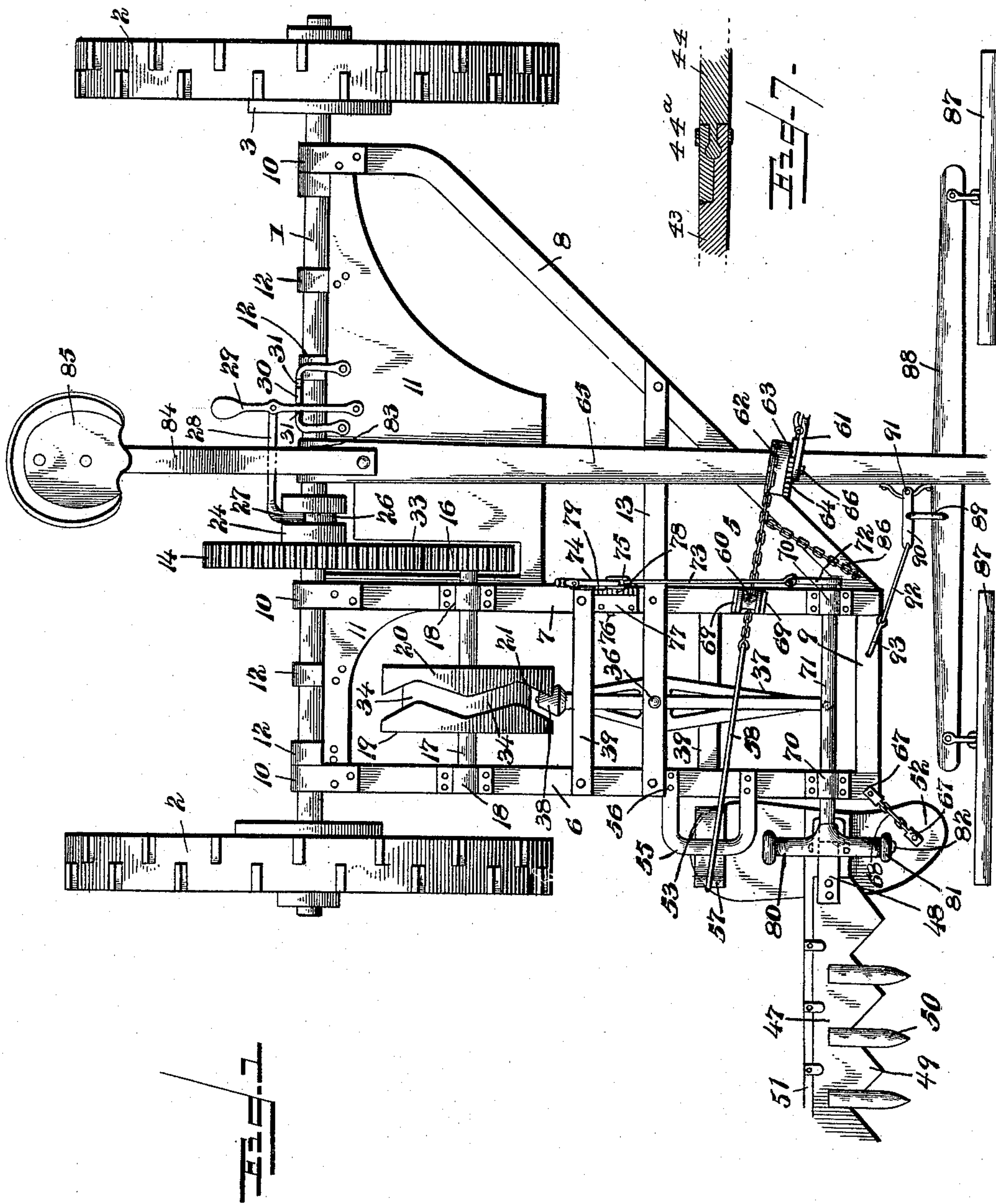
(No Model.)

2 Sheets—Sheet 1.

D. A. GILLIOM.
MOWER.

No. 535,538.

Patented Mar. 12, 1895.



Inventor

Daniel A. Gilliom

Witnesses

E. H. Stewart

J. B. Quinn

By *his* Attorneys.

C. A. Snow & Co.

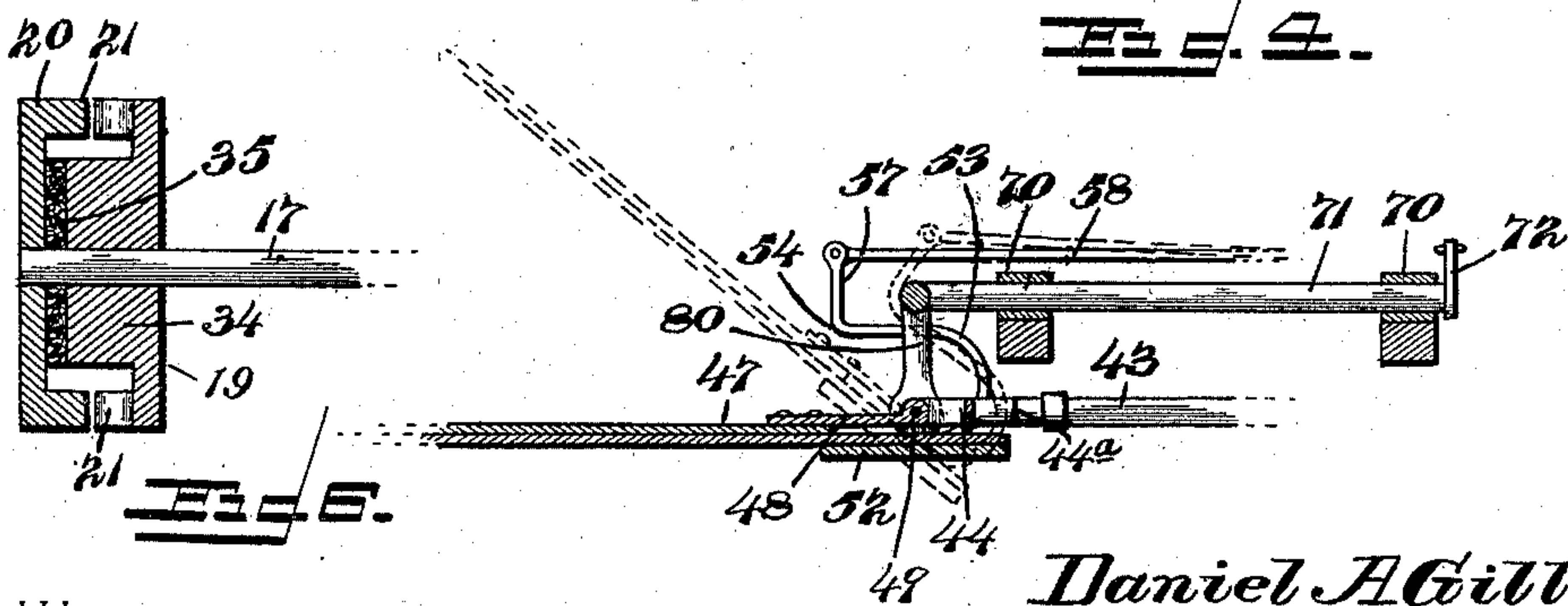
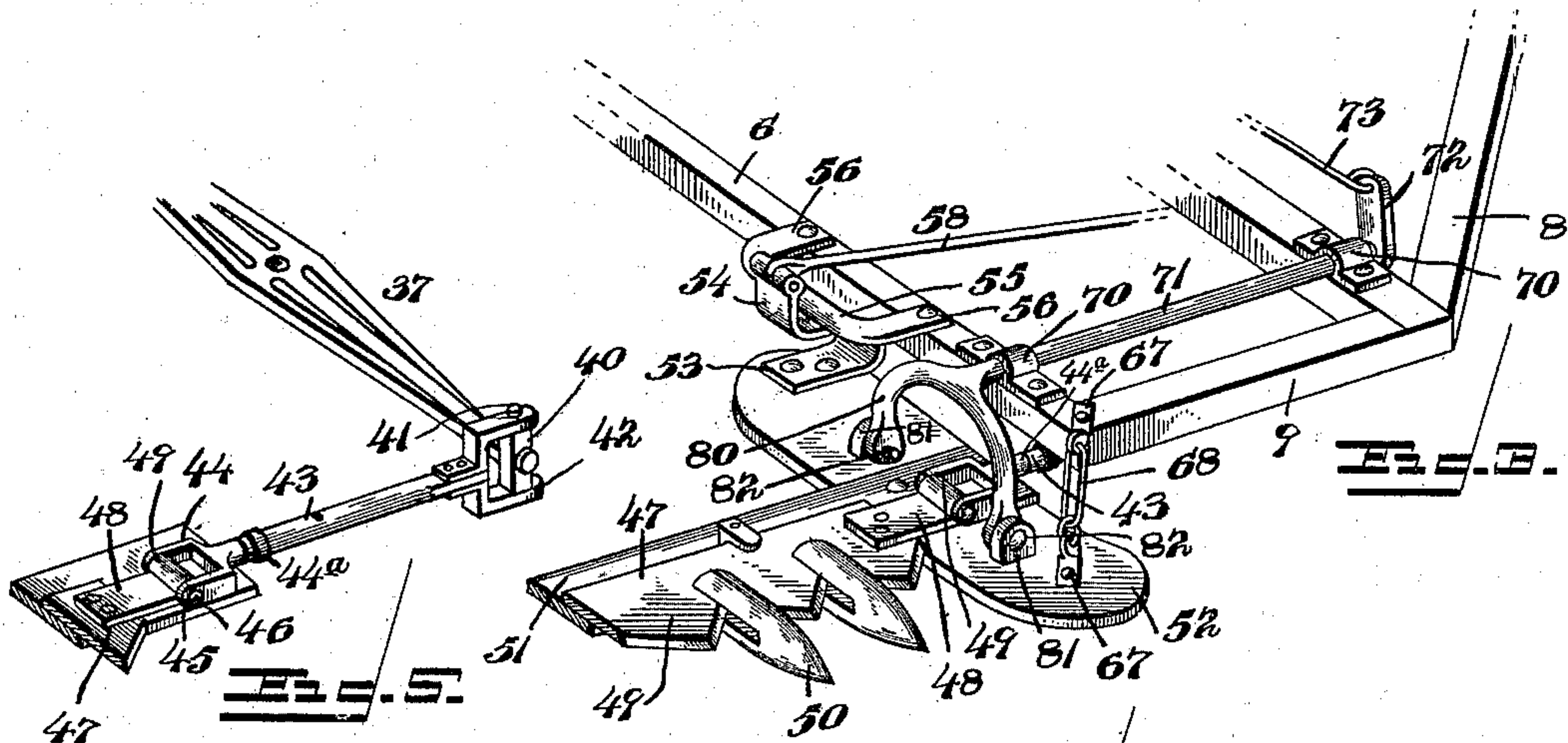
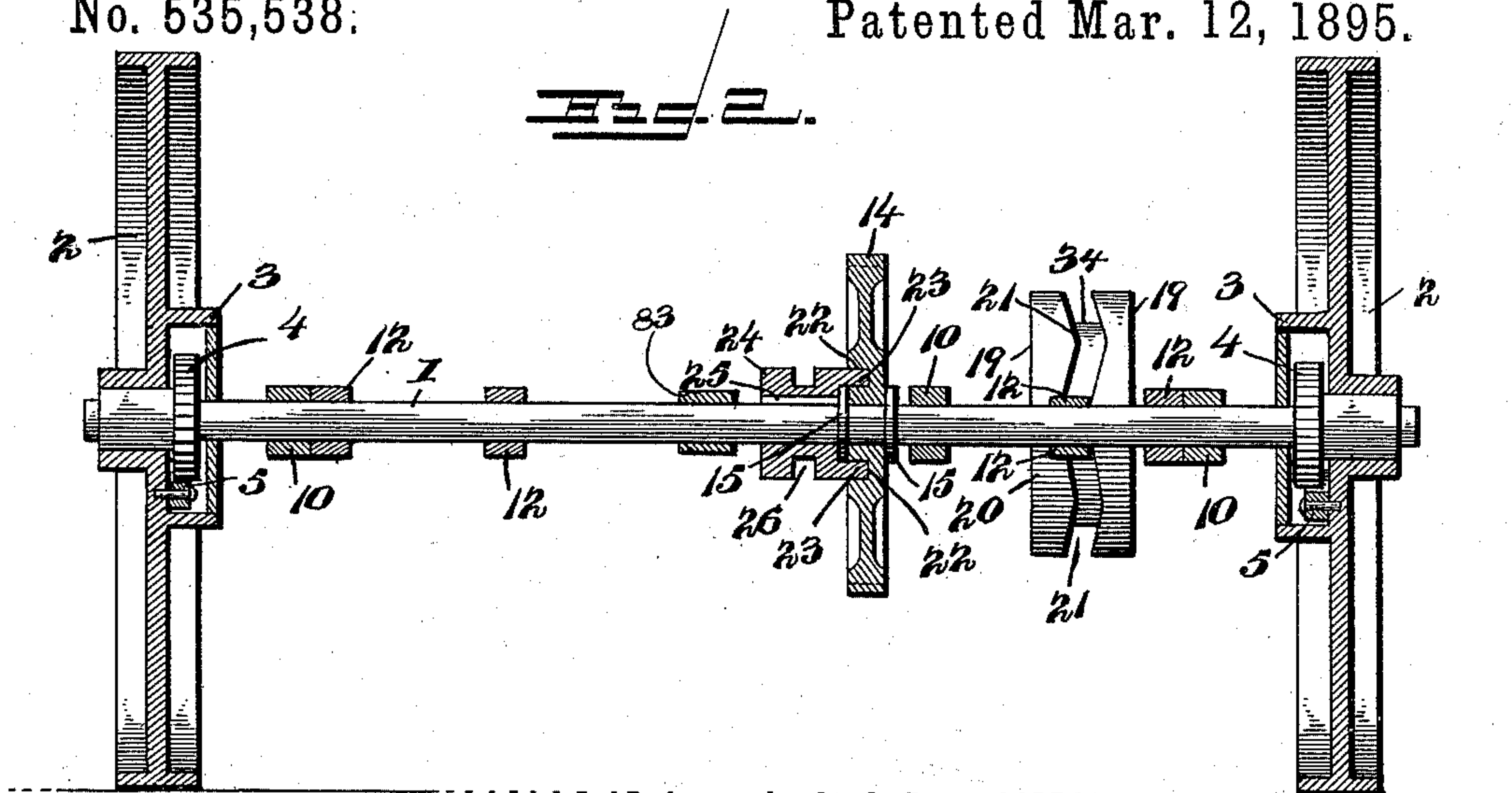
(No Model.)

2 Sheets—Sheet 2.

D. A. GILLIOM.
MOWER.

No. 535,538.

Patented Mar. 12, 1895.



Inventor

Daniel A. Gilliom

Witnesses

E. H. Stewart

By his Attorneys.

J. R. Owens

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

DANIEL A. GILLIOM, OF BERNE, INDIANA.

MOWER.

SPECIFICATION forming part of Letters Patent No. 535,538, dated March 12, 1895.

Application filed June 22, 1894. Serial No. 515,397. (No model.)

To all whom it may concern:

Be it known that I, DANIEL A. GILLIOM, a citizen of the United States, residing at Berne, in the county of Adams and State of Indiana, have invented a new and useful Mower, of which the following is a specification.

My invention relates to an improvement in mowers, and the objects in view are to provide a simple, inexpensive, and efficient apparatus, particularly with reference to the means for manipulating the cutter bar to move it into or out of operative position, and to vary its elevation.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1 represents a plan view of my complete machine; Fig. 2, a section thereof, taken longitudinally with the axle and looking forwardly from the line of section; Fig. 3, an enlarged perspective view, illustrating the arrangement of the cutting-bar and the means for supporting, adjusting, and tilting the same; Fig. 4, a cross-section, taken laterally and in longitudinal alignment with the cutting apparatus, and showing in dotted lines the position which said apparatus assumes when raised to a vertical position; Fig. 5, a detail perspective of the connection between the knife-bar, pitman, and the rock-shaft of the eccentric wheel; Fig. 6, a detail section of the eccentric wheel. Fig. 7 is a detail section of the joint in the cutter-bar pitman.

The reference numeral 1 indicates the axle of the machine, which may be formed of cast or wrought iron, as desired, and upon which are mounted the carrying-wheels 2. The carrying-wheels 2 are one for each end of the axle, and are provided with the boxes 3, and in which are arranged the ratchet-wheels 4, fixed to the axle and operating with the pawls 5, fixed in turn to the box 3. Thus it will be seen that as the axle moves forwardly the pawls 5 will positively engage the ratchets 4, and cause the axle to revolve in unison with the revolutions of the wheels. On the other hand, as the machine moves rearwardly the ratchets 4 will revolve by the pawls but not in positive engagement therewith, thereby

allowing the wheels to revolve independently of the axle.

6, 7, and 8 indicate the main beams of the cutting apparatus frame, and these are three in number, two of which, 6 and 7, extend parallel with each other, while the remaining beam, 8, extends at an angle of about forty-five degrees from the beams 6 and 7. Rigidly secured to the front extremities of the beams 6 and 7, and extending laterally from one to another, is the beam 9, which is also rigidly connected to the front end of the beam 8, whereby the three main beams of the frame are connected to the front ends of each other.

Rigidly secured to, or formed integral with, the rear ends of the beams 6, 7, and 8, are the boxes 10, which are revolubly mounted upon the axle 1, so as to secure the cutting apparatus frame thereto, leaving the axle capable of free rotary movement irrespective of said frame. Arranged between the beam 6 and the beam 8, is the frame-casting 11, which is formed, preferably, of cast metal and which is rigidly secured to the beam 7, and provided with boxes 12 embracing the axle and revolubly mounted thereon. The purpose of this casting, or frame-plate, is to form a platform for the frame of the machine, and, in addition, to add strength and rigidity thereto. By means of the boxes 12 the frame-plate or casting 11 will be capable of swinging on the axle and in unison with the movements of the frame.

13 indicates a transverse brace-rod, which is rigidly secured to the beams 6, 7, and 8, at points approximately their middles, and this has for its purpose to brace and render rigid the frame of the cutting apparatus and to serve as a fulcrum-bearing for the cutting-apparatus lever, as will be more fully explained hereinafter.

Mounted loosely upon the axle 1, and held incapable of lateral movement, by means of the collars 15, is the spur-gear 14, which is capable of free revolution on the axle, and which is adapted to mesh with the pinion 16 of the revolving shaft 17. The shaft 17 is mounted in the boxes 18, fixed one to each of the beams 6 and 7, and parallel with the axle 1. Fixed to the shaft 17, at a point midway the beams 6 and 7, is the wheel 19, which is provided with a broadened face 20, formed

with the groove 21 therein. The groove 21 is of a serpentine form, and extends throughout the said face. This wheel, 19, its construction and function, will be left for subsequent description.

Formed in the left-hand side of the spur-gear 14 are the radial passages or recesses 22, which are adapted for the reception of the studs 23, formed integral with, or rigidly secured to, the sliding collar or clutch-member 24. The clutch-member 24 is provided with a longitudinal groove adapted for the reception of the correspondingly-disposed rib 25, fixed to the axle 1 and adapted to cause the clutch-member to revolve in unison with the axle, leaving the said member free to move longitudinally on the axle. Formed in the clutch-member 24, and extending around the periphery thereof, is the annular groove 26, which is adapted for the reception of the fork 27. The fork 27 has rigidly secured thereto the laterally-extending arm 28, which is, in turn, pivotally connected to the lever 29, fulcrumed to the frame-plate or casting 11, at a point directly adjacent to the axle.

The lever 29 co-operates with a plate 30, which is rigidly secured to the frame-plate 11, and which is provided with the notches 31, adapted to receive the lever and to hold the same in place. Thus it will be seen that the lever may be adjusted to either of the positions permitted by the notches 31, and that such adjustment will result in a lateral or transverse movement of the clutch-member 24, and in a consequent engagement or disengagement of such member with the wheel 14. By these means the wheel 14 may be made to revolve in unison with the axle, or to remain stationary irrespective of the revolutions thereof.

33 indicates an opening formed in the plate 11, and adapted to receive the front half of the gear 14, and to permit said gear free revolution with the axle. Returning to the wheel 19, this wheel is formed of two transverse sections, one of which is provided with a boss 34, formed integral therewith and extending toward the companion section. Interposed between the boss 34, and the said companion section, is the packing 35, which may be of any class, preferably hair, and which has for its purpose to permit the moving together of the two sections when the exigencies of the occasion may require. It is proposed to move the sections together after the groove 21 has become so worn that it is too large for the end of the lever operated thereby, and by moving the sections together the two sides of said groove may be advanced toward each other, thereby diminishing its width.

It is understood that each of the sections of the wheel 19 is formed with one side of the groove 21 thereon, to the end that this decrease in the width of the groove may be effected. Fulcrumed to the pin 36, of the brace 13, is the lever 37, which has its rear

end extended to the periphery of the wheel 19 and into the groove 21 thereof, the lever being disposed longitudinally on the frame. The rear extremity of the lever 37 is provided with the anti-friction roller 38, which is, of course, revolvably mounted thereon, and which is adapted to lie within the groove 21, and to operate therewith as the wheel revolves and as will be understood.

Rigidly secured to the beams 6 and 7, and on either side of the brace 13, respectively, are the guides 39, which are two in number, and which are provided to hold the lever 37 in the proper position. The guides 39 consist, each, of two lateral beams or rods arranged one on either side of the lever, and secured to their respective beams 6 and 7. By these means the displacement of the lever 37 in a vertical line is rendered quite impossible. The forward end of the lever 37 extends to a point directly rearward of the beam 9, and is there provided with the vertical bar 40, which is rigidly secured to the front extremity of the lever 37 at the middle of the bar, and which has its end projecting above and below said lever, and pivotally arranged within the openings 41 of the yoke 42.

The yoke 42 is rigidly secured to, or formed integral with, the pitman 43, and has for its purpose to permit the pivotal connection of said pitman with the lever 37. Thus it will be seen that the lever 37 will be allowed free and unrestrained movement on its fulcrum, and that this movement is transmitted to the pitman 43 with the least possible degree of friction, and with no irregularity or binding of the parts. The remaining or outer end of the pitman 43 is connected to the yoke 44, so as to be capable of axial movement thereon, and the yoke is arranged at right angles to the yoke 42, or horizontally, and is formed with a joint 44^a, so as to permit the yoke to swing with the cutting apparatus when tilting the same.

Formed in the outer ends of the arms composing the yoke 44, are the eyes or openings 45, which are adapted for the reception of the pin 46. The pin 46 extends longitudinally with the machine and through said openings 45, it being provided to effect the pivotal connection of the knife-bar 47 and the pitman 43. To this end the arm 48 is rigidly secured to the inner end of the bar 47, and is provided at its outer end with the box 49, formed, preferably, by bending over the material composing said arm, and adapted to receive the pin 46 and to effect a pivotal connection therewith. Thus it will be seen that as the pitman 43 is given its characteristic reciprocal movement the bar 47 will move similarly, and cause its attached knives, 49, to stroke through the space of the fingers 50, and over the finger bar 51, in the operation of cutting the grass.

The construction of the cutting-bar 47, and the finger bar 51, is the same as that ordinarily employed in machines of this class; and, therefore, this needs no further description.

Rigidly secured to the under and inner sides of the finger bar 51, is the shoe 52, which extends to the front and rear sides of said bar, and which is curved in the arc of a circle, so that it will be capable of sliding easily over the ground and of supporting the inner end of the cutting apparatus. Rigidly secured to the rear portion of this shoe, and on the upper side thereof, is the plate 53, which is shaped to form the bend 54, adapted to bear against the bearing rod 55, when the cutting apparatus is raised. The bearing rod 55 has formed integral with its ends the arms 56, which are two in number and which proceed inwardly to the beam 6, to which they are rigidly connected. Thus it will be seen that the shoe 52, when raised, may be braced against the beam 6 by the bearing rod 55 and bend 54. The plate 53, after forming the bend 54, is extended to form the arm 57, which extends upwardly and outwardly and is pivotally connected to the approximately transverse rod 58. The transverse rod 58 extends across to the front end of the beam 7, and is there connected to the chain 59, which passes, in turn, under the pulley 60 and up to the sector 62, fixed to the lever 61.

The sector 62 is arranged with its circular side upwardly and has the chain 59 fixed to its left-hand end, while the body of the chain passes over the sector. Thus, by swinging the lever 61 on its fulcrum, the chain 59 may be made to wind over the sector 62, which will result in a drawing of the rod 58 and in a consequent swinging of the arm 57 of the plate 53, to the left. As the arm 57 swings, it will carry with it the shoe 52, and the finger 51, which is affixed thereto, the whole device swinging on the hereinafter described parts.

The lever 61 is provided with a pawl 63, which operates with the ratcheted sector 64, fixed to the shaft or tongue 65, while the lever itself is fulcrumed to the pin 66 of said tongue.

67 indicates two clip-plates, which are rigidly secured to the shoe 52 and to the front end of the beam 6, respectively, and which are connected to the link 68, whereby the shoe 52 is flexibly connected to the frame of the machine so as to allow the shoe and its attachments to swing thereon under the influence of the power applied to the lever 61, as has been explained. The roller 60 is revolvably journaled in the bearing-plates 69, fixed to the beam 7, and arranged one at either end of the roller. Fixed to the outer extremities of the beams 6 and 7, and on the upper side thereof, are the boxes 70, which are one for each beam and which are provided to effect the revoluble mounting of the shaft 71. The shaft 71 extends from one box to another and has both ends extended a short distance beyond their respective boxes, the left-hand end being provided with the crank-arm 72, which is rigidly fixed thereto and has its outer end connected, pivotally, to the rod 73. The

rod 73 extends rearwardly to the lever 74, with which it is pivotally connected by means of the link 75, while the lever is fulcrumed to the spindle 76, fixed to the beam 7, by means of plate 77.

Thus it will be seen that by swinging the lever 74 on its fulcrum, the rod 73 may be reciprocated correspondingly; and, by means of ratchet 78 and pawl 79 the said rod and lever may be secured in any desired position. The right-hand end of the shaft 71 is provided with the yoke, or semicircular bar, 80, which is rigidly fixed thereto at its middle, and which has its arms projecting downwardly to the shoe 52. The arms of the yoke 80 are pivotally connected to the shoe 52, on either side of the cutting apparatus, by means of the studs 81 arising from said shoe and provided with horizontal pins 82, passing through the studs and yoke and operating to effect the pivotal connection aforesaid.

The purpose of the shaft 71, and its attached yoke 80, is to effect the edgewise adjustment of the cutting apparatus, to permit throwing the fingers downwardly so as to operate nearer the ground and cut the grass shorter. Thus, by swinging lever 74, rod 73 will be reciprocated, and shaft 71 correspondingly rocked, which will result in a similar movement of the yoke 80 and, owing to the connection of the shoe therewith, a movement of the shoe and cutting apparatus. It will be understood that this movement, the rocking of shoe 52, will be unrestrained, since the connections between yoke 44 and pitman 43 will permit the spindle 48 to revolve therein, and since the plate 53 has, when the shoe is arranged horizontally, no positive connection with its shaft 55.

The tongue 65 is provided at its rear end with a box 83, which loosely embraces the axle at about its middle, and which has for its purpose to pivotally connect the tongue and axle. Rigidly secured to the rear end of the tongue 65, and projecting upwardly and rearwardly therefrom, is the seat-bar 84, which is formed, preferably, of spring metal and provided with the seat 85, upon which the driver of the mower may be seated. The tongue 65 has no positive connection with the frame of the machine, and is capable of moving on its bearing 83 independently of the frame.

Means are provided for adjusting the frame in relation to the tongue, and these consist of the chain 86, fixed to the front end of the beam 8, and arising to the sector 62, where it is securely connected to the chain 59 of prior mention. It will be remembered that the purpose of the chain 59 is to assist in the raising of the cutting apparatus; and, this being the case, it will be impossible to operate the chain 86, and consequently raise the frame, without operating the chain 59 to raise the cutting apparatus. This condition is exactly adapted to my machine, since the frame will be lowered to the ground when the cutting apparatus is horizontal and in operative position, and when it is desired to raise the frame, it will also be

desired to raise the cutting apparatus, since neither position of either part will be assumed except during the inert condition of the operative parts of my machine.

5 In the use of my invention, the team is hitched to the singletrees 87 of the doubletree 88. The doubletree 88 is pivotally connected to the front end of the link 89, which is similarly connected, at its rear end, to the lever 10 90, fulcrumed to the point 91, and having its outer end pivotally connected to the rod 92. The rod 92 extends rearwardly from the lever 90, and is also pivotally connected, and here, to the center of the beam 9, by means of the 15 link 93. Thus it will be seen that the frame of the machine is allowed free movement in a vertical line, and yet, connected to the whiffletrees so that the power applied thereto will be divided equally between the tongue 65 and 20 said frame.

When the team has been properly connected to the machine, the frame should be lowered until the shoe 52 engages the ground, and the cutting apparatus is extended horizontally and in operative adjustment. The 25 machine should now be drawn along the ground and advanced upon the grass to be cut; whereupon the gears 14 and 16 will operate to revolve wheel 19, thereby causing the lever 37 to swing on its fulcrum with a quick 30 multiplied movement. This will impart a similar movement to pitman 43 and to knife-bar 47. The reciprocation of the knife-bar 47 will result in the usual operation of cutting 35 the grass, which falls back of the cutting apparatus and upon the ground, as will be understood.

The lever 29 is adapted to be operated by the foot of the driver, who will be seated upon 40 the seat 85, and therefore in a convenient position to permit of so operating the lever.

Having described my invention, what I claim is—

1. The combination with a supporting 45 framework, of a rock-shaft, mounted thereon and provided at one end with a downturned fork, a shoe pivotally connected to said downturned fork, cutting mechanism supported by the shoe, means for operating said cutting

mechanism, a fixed bearing rod supported by 50 the framework parallel with the direction of movement of the machine and above the rear end of said shoe, a plate secured to the shoe and rising above and contiguous to said bearing-rod, means for rocking said shaft, and 55 mechanism connected to the upper end of said plate, whereby the upper end thereof may be drawn horizontally and transversely to elevate the outer end of the cutting mechanism, said bearing-rod serving as a fulcrum 60 for the plate, substantially as specified.

2. The combination with a supporting framework, of a rock-shaft 71 mounted upon the framework and provided with a downturned fork 80, a shoe 52 having ears 81 which 65 are pivotally connected to the extremities of the arms of said fork, a flexible link connection between the front end of said shoe and a superjacent portion of the framework, cutting apparatus supported by said shoe, and 70 attached thereto between the arms of said fork, means for communicating motion to the cutting apparatus, a horizontal fixed bearing-rod 55 arranged parallel with the direction of movement of the machine and above the 75 rear end of said shoe, means for rocking said shaft to tilt the shoe and hence the cutting apparatus carried thereby, a curved-plate 53 secured to the end of the shoe curved laterally under said bearing-rod, doubled upon 80 itself and extending in the opposite direction under the bearing-rod and terminating in an upright arm 57 which extends above the plane of the bearing-rod, the angle 54 between said arm 57 and the contiguous portion of the plate 85 being adapted to engage said bearing-rod, and means for moving said arm laterally, to bring the angle 54 in engagement with the bearing-rod and elevate the outer end of the cutting apparatus, substantially as specified. 90

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

DANIEL A. GILLIOM.

Witnesses:

SIMON GILLIOM,
ABRAHAM SCHNECK.