

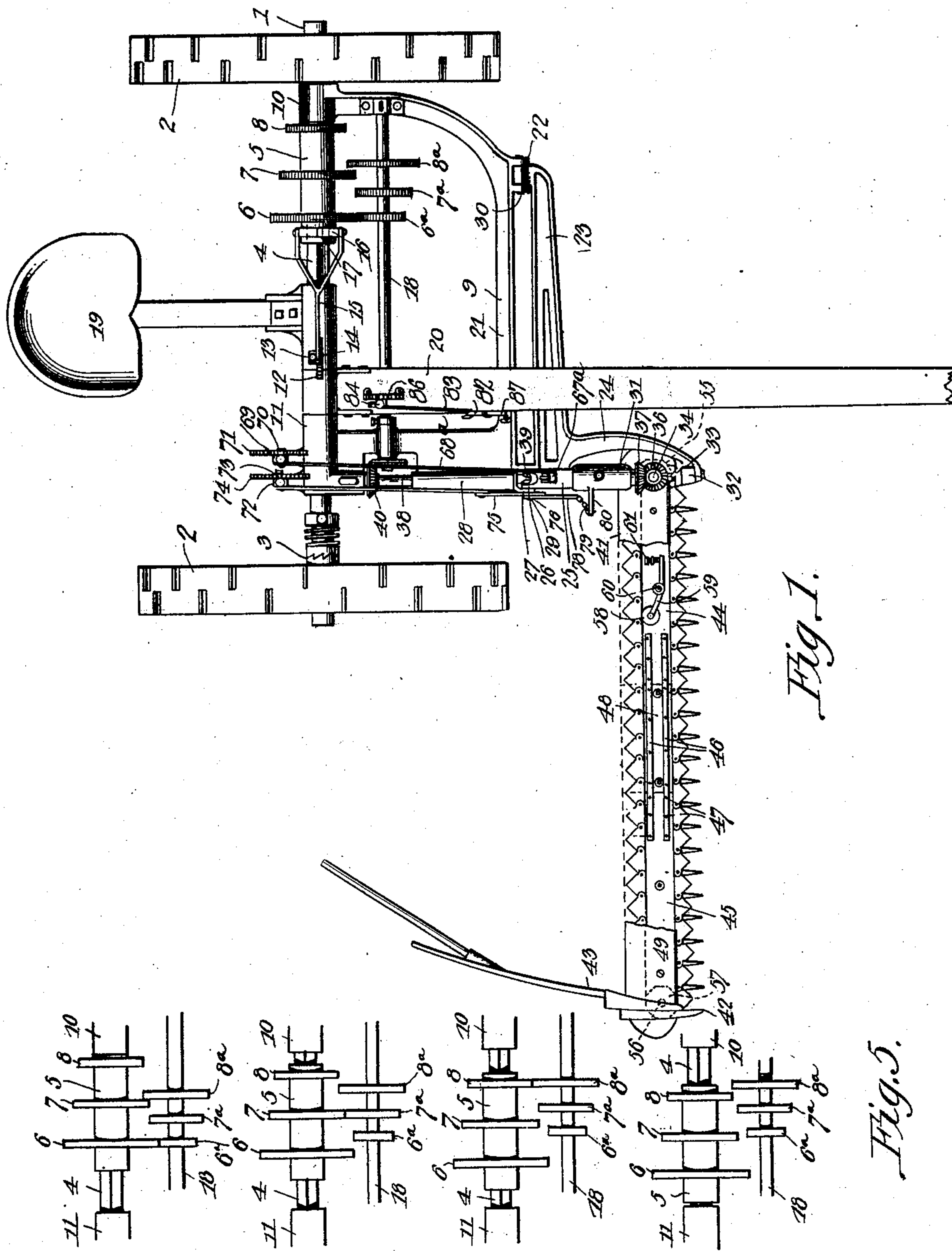
No. 755,844.

PATENTED MAR. 29, 1904.

J. A. CARTER.  
MOWING MACHINE.  
APPLICATION FILED OCT. 15, 1903.

NO MODEL.

4 SHEETS—SHEET 1.



Witnesses  
*E. J. Stewart*  
*Wm. Bagger*

J. A. Carter, Inventor.  
by *C. A. Snow & Co.* Attorneys

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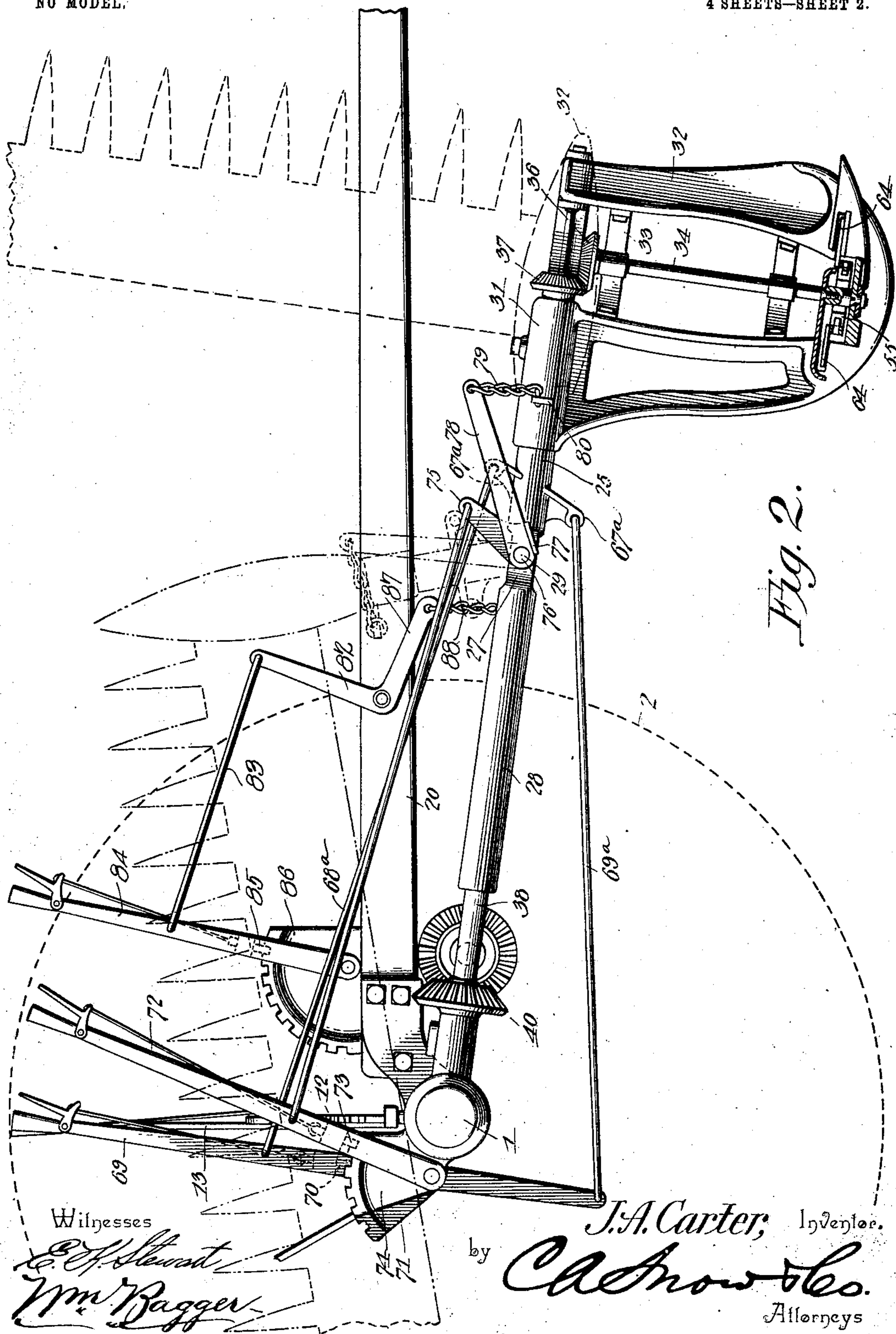
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4 SHEETS—SHEET 3.

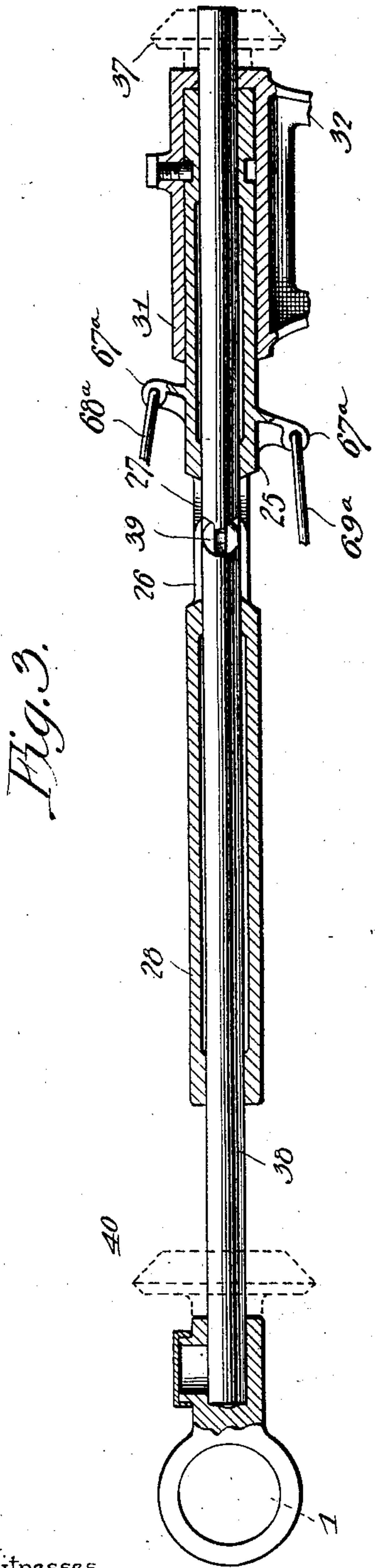


Fig. 3.

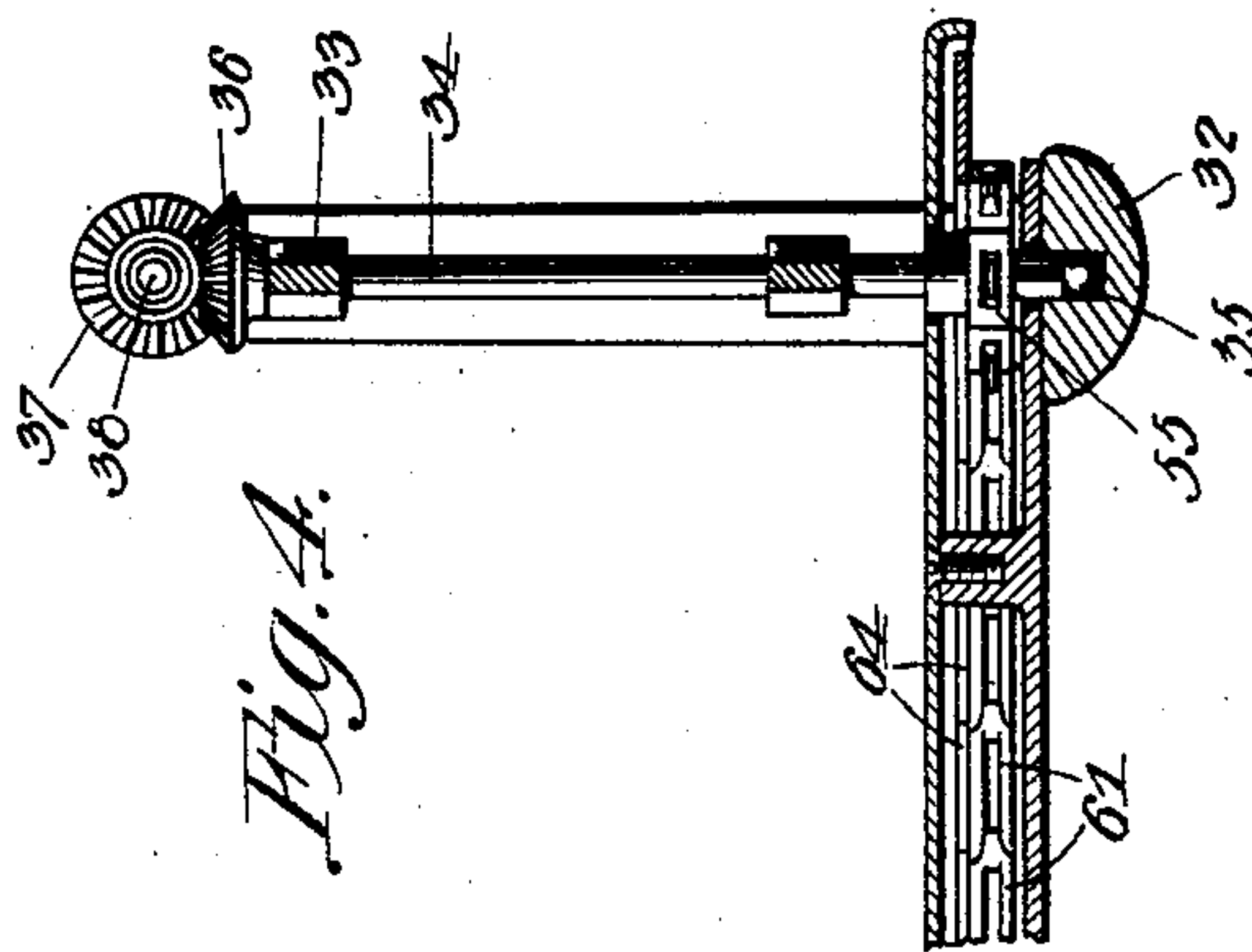


Fig. 4.

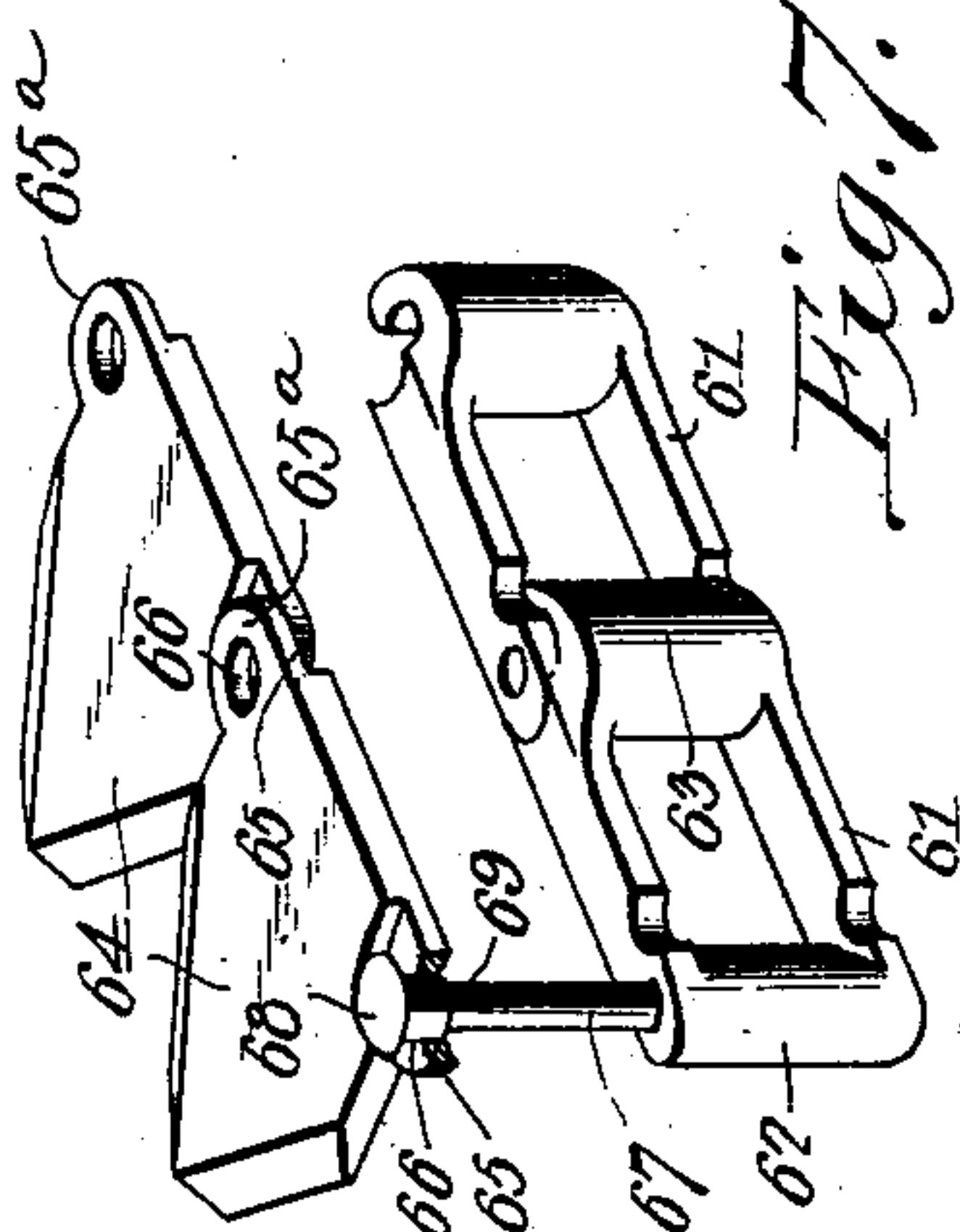
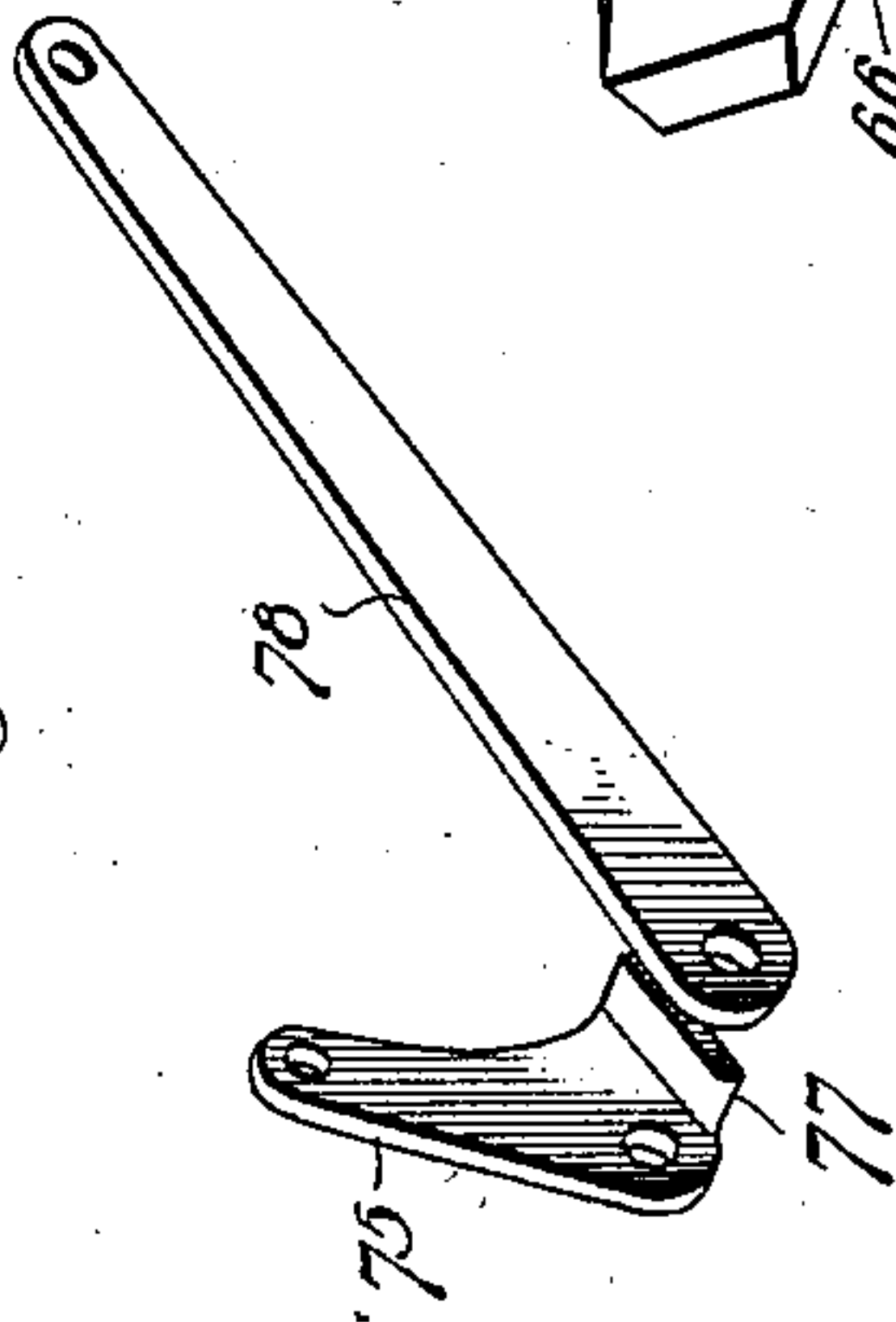


Fig. 7.

Fig. 6.



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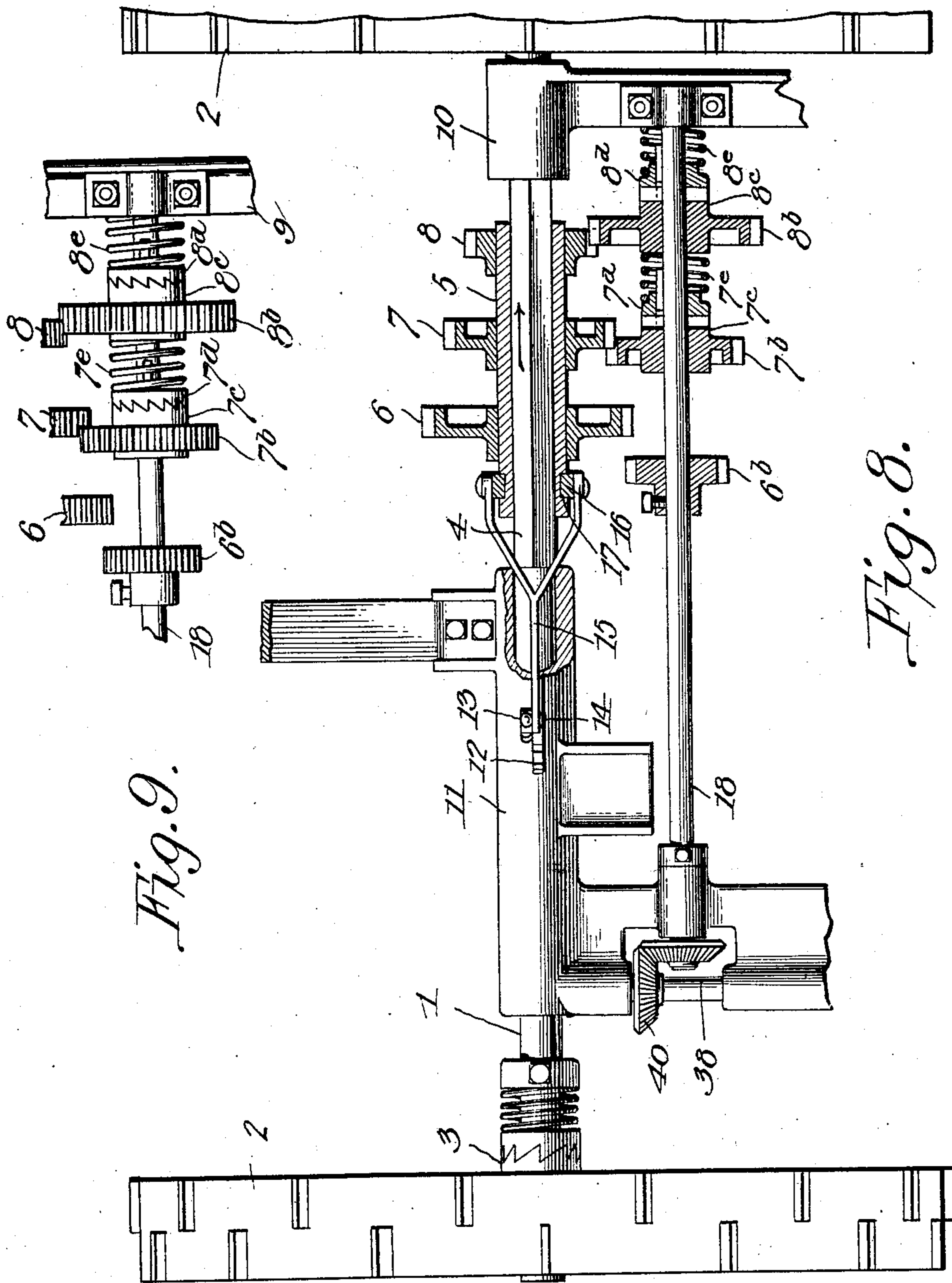


J. A. CARTER.  
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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

JOSEPH A. CARTER, OF McMECHEN, WEST VIRGINIA.

## MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 755,844, dated March 29, 1904.

Application filed October 15, 1903. Serial No. 177,179. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH A. CARTER, a citizen of the United States, residing at McMechen, in the county of Marshall and State of West Virginia, have invented a new and useful Mowing-Machine, of which the following is a specification.

This invention relates to mowing-machines; and it has for its object to provide a machine of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency.

With these and other objects in view my invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a top plan view of a mowing-machine constructed in accordance with the principles of my invention. Fig. 2 is a sectional side elevation of as much of the machine as is necessary to illustrate the features of my invention, this view being on an enlarged scale. Fig. 3 is a sectional view taken longitudinally through the tumbling-rod used for transmitting motion and related parts. Fig. 4 is a vertical sectional view taken through the shoe supporting the cutting apparatus and through a portion of the latter. Fig. 5 is a diagrammatic view illustrating the various relative positions of the spur-wheels and pinions for transmitting motion from the axle to the counter-shaft at variable rates of speed. Fig. 6 is a perspective detail view showing the flanged lever-arm 75 and the lever 78 cooperating therewith. Fig. 7 is a perspective detail view illustrating the construction of the endless chain and the teeth or cutters constituting the cutting apparatus. Fig. 8 is a plan view with parts broken away of a modified construction of the means for transmitting motion from the axle to the counter-shaft at variable rates of speed. Fig. 9 is a detail plan view of the means for transmitting motion from the axle to the counter-shaft at variable rates of speed.

Corresponding parts in the several figures are indicated by similar numerals of reference.

1 designates the axle, which is supported upon traction-wheels 2 2, which are connected with said axle by ordinary clutch mechanism 3, whereby the axle shall be rotated when the machine is propelled in a forward direction, while when the machine is backed the wheels will revolve loosely upon their respective spindles. Means may be provided whereby the clutch mechanism may be thrown out of gear, so as to permit the machine to be propelled forwardly without rotating the axle; but such means are well known and of ordinary construction and have not been illustrated in the drawings.

The axle 1 is provided with a square or non-circular portion 4, upon which is mounted a slidable sleeve 5, which of course revolves with the axle. This sleeve carries a plurality of gear-wheels, of which in the accompanying drawings three have been shown, (designated, respectively, 6, 7, and 8.) These gear-wheels are of different diameters, the outer wheel 8 being in the present instance the smallest one, as will be seen by reference to the drawings.

The axle 1 supports a frame 9, having sleeves or bearings 10 and 11, in which the said axle is revoluble. The sleeve 11, which is adjacent to the non-circular portion of the axle, is equipped with a toothed segment 12, concentrically with which is pivoted a lever 13, having a suitably-operated lock-dog 14, engaging the teeth of the segmental rack. The lever 13 is connected by a rod 15 with a sleeve or band 16, which is revoluble in a groove 17 upon the slidable sleeve 5, which by this means may be adjusted to and retained at various positions. The frame 9 affords bearings for a counter-shaft 18, which is parallel to the axle, and upon which are mounted a plurality of pinions, (designated, respectively, 6<sup>a</sup>, 7<sup>a</sup>, and 8<sup>a</sup>,) adapted to operatively engage the gear-wheels 6, 7, and 8 upon the sleeve 5; but relatively so disposed that only one pair of wheels may be operatively engaged at any one time, while it is also possible to so dispose the sleeve 5 that none of the gear-wheels shall be in engagement with their respective pinions. This position is oc-



cupied when it is not desired to transmit motion to the working parts of the machine—namely, the cutting apparatus of the same. It is evident that by properly adjusting the sleeve 5 the counter-shaft 18 may be rotated at various rates of speed, a high speed being communicated to said shaft when the gear-wheel 6 is in engagement with the pinion 6<sup>a</sup>, while a low rate of speed is communicated while the small gear-wheel 8 is in engagement with the large pinion 8<sup>a</sup>, a medium rate of speed being produced by the engagement of the gear-wheel 7 with the pinion 7<sup>a</sup>, as will be readily understood.

It is obvious that the construction and arrangement of parts for transmitting motion from the axle to the counter-shaft at variable rates of speed will only be effective when the wheels are so arranged that any one pair of gear-wheels shall not enter into engagement with each other until engagement between the adjacent pair of wheels has entirely ceased; otherwise it is obvious that two pairs of wheels would become interlocked with each other and the machine would come to a dead stop or breakage would ensue. I may therefore find it preferable at times to avail myself of the modified construction illustrated in Fig. 8 of the drawings, by reference to which it will be seen that the three gear-wheels 6, 7, and 8 are mounted, as in the former construction, upon a sleeve 5, which is slidable upon and revoluble with the axle. The counter-shaft 18, which is located in the same relation to the axle as heretofore, also carries three gear-wheels, which in this instance are designated 6<sup>b</sup>, 7<sup>b</sup>, and 8<sup>b</sup>, and which are revoluble upon the axle. The wheels 7<sup>b</sup> and 8<sup>b</sup> are provided upon their outer sides with clutch members 7<sup>c</sup> and 8<sup>c</sup>, which are adapted to engage clutch members 7<sup>d</sup> and 8<sup>d</sup>, which are feathered upon the counter-shaft, so as to have a limited sliding movement thereon, while of necessity they rotate with said counter-shaft. Springs 7<sup>e</sup> and 8<sup>e</sup> are coiled upon the counter-shaft in such a manner as to force the slidable clutch members 7<sup>d</sup> and 8<sup>d</sup> in the direction of the clutch members 7<sup>c</sup> and 8<sup>c</sup> upon the wheel. The wheel 6<sup>b</sup> may be likewise equipped, but it has not been deemed necessary to show it in the drawings. It will be readily understood that in case the sleeve 5 is adjusted in the direction necessary, for instance, to bring the gear-wheels 7 and 7<sup>b</sup> out of engagement with each other and the gear-wheels 8 and 8<sup>b</sup> into engagement with each other for the purpose of reducing the speed, and the sleeve 5 is for this purpose moved in the direction of the arrow if the wheels 8 and 8<sup>b</sup> should pass into engagement with each other before the disengagement of the wheels 7 and 7<sup>b</sup> takes place, the wheel 8<sup>b</sup> being revoluble upon the axle will simply be retarded, the spring-clutch device in the meantime clicking until the wheels

8 and 8<sup>b</sup> pass into perfect engagement and the wheels 7 and 7<sup>b</sup> pass entirely out of engagement, when the wheel 8 will engage the wheel 8<sup>b</sup>, which through the clutch is interlocked with the shaft, which will then be rotated at a reduced rate of speed. By this simple contrivance any danger which might be caused by the interlocking of two pairs of wheels simultaneously will be entirely obviated.

The sleeve portion 11 of the frame supports a spring-seat 19 for the driver, who may thus easily reach and manipulate the lever 13.

20 designates the tongue, which may be suitably connected with the sleeve portion 11 and with the front bar 21 of the frame 9.

The frame portion 9 of the machine is provided with forwardly-extending brackets 22, which are hingedly connected with an auxiliary frame 23, which comprises a curved top or front bar 24, having a sleeve portion 25, which latter is provided with ears 26, pivotally connected with corresponding ears 27 of a sleeve 28, which constitutes an integral part of the main frame, the pivots 29, connecting the ears 26 and 27, being in direct alinement with the pivot or hinge 30, which connects the frame 23 with the bracket 22 at the opposite side of the machine. The pivots 29 and 30 being horizontally disposed and in alinement with each other it is evident that the frame 23 with its related parts may swing vertically upon the said pivots. The sleeve 28 may be described as constituting the bracket 22 at one side of the main frame or it may be supported upon or formed integrally with the said bracket within the scope of my invention.

The sleeve 25 of the movable frame 23 is revolubly connected with a sleeve or collar 31, disposed exteriorly thereon and formed integrally with a shoe 32, which constitutes the inner shoe of the cutting apparatus. This shoe, which is in the form of an inverted yoke, is provided with a cross-bar 33, and an approximately vertical shaft 34 is provided with bearings in said cross-bar and in the bottom of the shoe, which is provided with a recess or step 35, forming a bearing for the lower end of said shaft. The latter is provided at its upper end with a bevel-pinion 36, meshing with a similar pinion 37 upon the front end of a shaft 38, having a joint 39, which is disposed in exact alinement with the hinge 29, which connects the sleeves 25 and 28, which latter are provided with suitable bearings to maintain the said shaft in operative alinement. The rear end of the shaft 38 is connected by miter-gearing 40 with the counter-shaft 18, from which motion is thus transmitted to the shaft 34 in the shoe 32 and whereby the cutting apparatus, to be herein- after more fully described, is driven.

The cutting apparatus comprises a casing 41, supported at its inner end upon the shoe



32 and provided at its outer end with a supporting-shoe 42, having a guard 43. This casing is composed of two end sections 44 and 45, suitably connected by means of straps 46 and bolts 47, which admit of the insertion between said end sections of an intermediate lengthening-section 48, which may be of any desired length. By keeping in stock several such intermediate sections of various lengths it is evident that the casing may be readily made of any desired length within reasonable limits. A top or cover 49 is provided for said casing. The shaft 34 extends through the inner sections of the casing and its top and carries a sprocket-wheel 55. The outer sections of the casing and cover afford bearings for a shaft 56, having a sprocket-wheel 57. Said sprocket-wheels 55 and 57 support an endless chain of cutters, said chain being kept taut by means of an idler 58, mounted upon one arm of a bell-crank lever 59, which is fulcrumed at 60, between the front and rear leads of the endless cutter-chain. A suitably-disposed adjusting-screw 61 is provided, whereby the bell-crank lever may be adjusted to regulate the tension of the idler 58 upon the rear lead of the chain of cutters. The chain of cutters is composed of a plurality of rectangular links 61, each provided at one end with a tubular cylindrical bar 62 and at its opposite end with a hook-shaped bar 63, adapted to hook over and thus become flexibly connected with a cylindrical bar of the adjacent link. The teeth or cutters 64 are of the conventional triangular shape and are provided at their bases and upper edges, at diagonally opposite corners, with laterally-extending ears or lugs 65 and 65<sup>a</sup>, which have perforations 66 alining with the tubular bars of adjacent links, but reduced to one-half the thickness of the body of the teeth, so that by placing the teeth together the ears or lugs of adjacent teeth will overlap and be made capable of being connected with the cylindrical tubular bar of a single link by a single rivet. It is obvious that when this construction is employed the teeth are all exactly alike and it is necessary to keep only a single kind of teeth in stock for use in case of breakage. The perforations 66 in the lugs 65 and 65<sup>a</sup> of the teeth or cutters are of greater diameter than the perforations in the cylindrical tubular bars of the links, and the rivets 67 employed for connecting said cutters and links are provided just below and adjacent to their heads 68 with thickened portions 69, engaging said perforations 66, so that when the end of the rivets are upset there will be no tightness or undue friction between the cutters and their connecting means. It is evident that a chain of cutters thus constructed may be very quickly and conveniently adjusted so as to fit the length of the cutter-casing by simply adding to or taking from the links and cutters of the chain.

The hinged sleeve 25, which constitutes a part of the adjustable frame 23, is provided with upwardly and downwardly extending arms or posts 67<sup>a</sup>, connected by means of rods 68<sup>a</sup> 69<sup>a</sup> with a lever 69, which is fulcrumed to the main frame of the machine, the said connecting-rods being pivotally connected with said lever on opposite sides of the fulcrum thereof. To avoid coming on a dead-center, the upper post 67<sup>a</sup> is preferably leaned forwardly and the lower post 67<sup>a</sup> rearwardly, as shown. The lever 69 is provided with a lock-dog 70, engaging a segment-rack 71, whereby the said lever may be retained at various points of adjustment. Another hand-lever 72, which is likewise fulcrumed to the main frame at a suitable point within convenient reach of the driver, is likewise provided with a lock-dog 73, engaging a segment-rack 74, and said lever is pivotally connected with an arm or lever 75, fulcrumed to the main frame at 76 and having a laterally-extending flange 77. Upon the fulcrum 76 is also pivoted an arm 78, adapted to be supported upon the flange 77 in a position approximately at right angles to the arm 75, and the free end of said arm 78 is connected by means of a chain 79 with an arm 80, extending laterally from the sleeve or collar 31, which is revoluble, as stated, upon the sleeve 25. The normal position of this sleeve 31 is assured by the weight of the cutting apparatus, which naturally when the machine is in operation travels upon the ground. When it is desired to elevate the cutting apparatus, this may be readily accomplished by manipulating the lever 72, which by operating the pivoted arms 75 and 78, through the chain 79, connecting the latter arm with the arm 80, extending laterally from the sleeve 31, will turn the latter or partially rotate it upon the supporting-sleeve 25, thus bringing the cutter-casing to an approximately vertical position. When it is desired to transport the machine from one field to another, the cutter-bar is first raised to a vertical position and the lever 69 is then manipulated, thus raising the hinged adjustable front frame 23 until the cutter-casing is supported upon the sleeve portion 11 of the frame of the machine which surrounds the axle, as described.

Adjustment of the main frame with relation to the tongue of the machine may be effected by means of a bell-crank lever 82, pivotally connected with the tongue and having its upper arm connected by a rod 83 with an operating-lever 84, equipped with the usual lock-dog 85, engaging a segmental rack 86. The lower arm 87 of the bell-crank lever is connected by a chain 88 with the main frame, which may thus be raised or lowered, thereby also serving to adjust the auxiliary front frame and the cutting apparatus carried thereby at various degrees of tilt.

From the foregoing description, taken in



connection with the drawings hereto annexed, the operation and advantages of my invention will be readily understood. The general construction of the machine is simple and inexpensive and the parts of the same combine and coöperate in such a manner as to produce the best possible results.

I desire it to be understood that while I have in the foregoing described a simple and preferred form of my invention, I do not necessarily limit myself to the structural details herein set forth, but reserve the right to any changes, alterations, and modifications within the scope of my invention which may be resorted to without departing from the spirit or sacrificing the utility of the same.

Having thus described my invention, I claim—

1. In a mowing-machine, the combination of a wheel-supported axle, a frame revolubly connected therewith, a counter-shaft upon said frame parallel to said axle, means for transmitting motion at various rates of speed from the axle to said counter-shaft, an adjustable frame hingedly connected along its rear edge with the main frame, cutting apparatus hingedly connected with and carried by said adjustable frame, and means for transmitting motion from the counter-shaft to the cutting apparatus.

2. In a mowing-machine, a wheel-supported axle, a frame revolubly connected with said axle and having a sleeve integral therewith, an auxiliary adjustable frame hingedly connected with the main frame and having a sleeve hingedly connected with the sleeve of the main frame, a supporting-shoe connected with the sleeve of the adjustable frame, endless cutting apparatus supported by said shoe, a shaft mounted vertically in the latter and connected operatively with the endless cutting mechanism, a shaft extending through the sleeves of the main frame and the adjustable frame and having a knuckle-joint in alinement with the hinge connection of said sleeves, miter-gearing connecting the front end of the shaft with the upper end of the vertical shaft supported on the shoe, a counter-shaft supported upon the main frame parallel to the axle, means for transmitting motion at variable speed from the axle to said counter-shaft, and miter-gearing connecting the latter with the rear end of the shaft.

3. In a mowing-machine, the combination of a main frame, rotary supporting means for said frame, an auxiliary adjustable frame hingedly connected along its rear edge with said main frame and having a forwardly-extending curved bar, a shoe hingedly supported by said auxiliary frame and curved bar, cutting apparatus supported by said shoe, and means for transmitting motion to the latter from the rotary supporting means of the main frame.

4. In a mowing-machine, the combination of a wheel-supported axle, a frame supported thereon, an auxiliary frame hingedly connected with the main frame, hingedly-connected sleeves upon the said main and auxiliary frames, a shaft extending through said sleeves and having a knuckle-joint in alinement with the hinge connection thereof, cutting apparatus supported by the auxiliary frame, means for connecting the rear end of the shaft with the source of power, means for connecting the front end of the shaft with the cutting apparatus to be driven, arms extending upwardly and downwardly from the sleeve of the auxiliary frame, a lever supported upon the main frame, rods extending from opposite sides of the fulcrum of said lever to the arms upon the sleeve of the auxiliary frame, said rods being pivotally connected with said arms and with the lever, and means for retaining the latter in adjusted position.

5. In a mowing-machine, the combination of a wheel-supported axle, a main frame supported thereon, an auxiliary frame hingedly connected along its rear edge with the main frame, cutting apparatus supported by said auxiliary frame, means for elevating the cutting apparatus to an approximately vertical position with relation to the hinged supporting-frame, and means for elevating the latter to swing the cutting apparatus to a rearward supported position upon the main frame.

6. In a mowing-machine, a wheel-supported axle, a main frame supported thereon, an auxiliary frame hingedly connected with the main frame, sleeves upon the main and auxiliary frames, hingedly connected, a collar revolubly supported upon the sleeve of the auxiliary frame, a shoe connected with said collar, cutting apparatus supported upon said shoe, and means for adjusting the collar to raise or lower the cutting apparatus.

7. In a mowing-machine, a wheel-supported axle, a main frame supported thereon, an auxiliary frame hingedly connected with the main frame, sleeves upon the main and auxiliary frames hingedly connected, a collar revolubly supported upon the sleeve of the auxiliary frame, a shoe connected with the said collar, cutting apparatus supported upon said shoe, an arm extending laterally from the collar, an arm pivotally connected to the main frame, a link connection between said arm and the arm extending from the collar supporting the cutting apparatus, and lever means for operating the arm pivoted to the frame to partially rotate the collar supporting the cutting apparatus.

8. In a machine of the class described, a revolubly-mounted collar having a laterally-extending arm, a shoe connected with said collar, cutting apparatus supported upon said shoe, a pair of arms pivotally connected with the main frame, one of said arms being pro-



vided with a flange supporting the other arm,  
a chain connecting the arm thus supported  
with the arm extending laterally from the  
revoluble collar, a hand-lever, means for re-  
5 taining the latter at various points of adjust-  
ment, and connecting means between said le-  
ver and the pivoted flanged arm.

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

JOSEPH A. CARTER.

Witnesses:

R. E. McCUSKEY,  
JOHN CARR.