

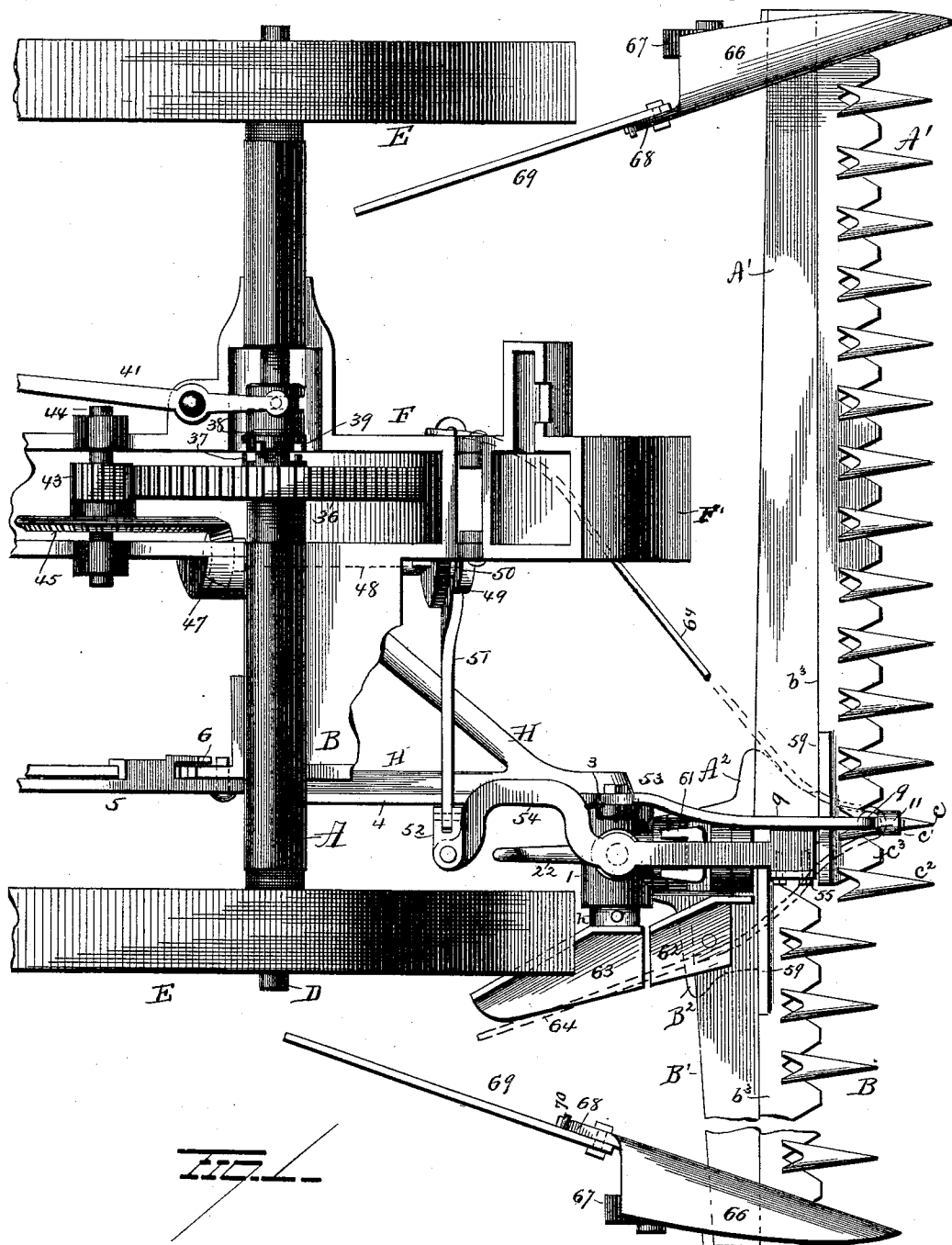
(No Model.)

4 Sheets—Sheet 1.

C. M. BROWN.
MOWING MACHINE.

No. 480,706.

Patented Aug. 16, 1892.



Witnesses
E. M. Hughes
G. F. Downing.

Inventor
Charles M. Brown

By his Attorney
H. A. Seymour

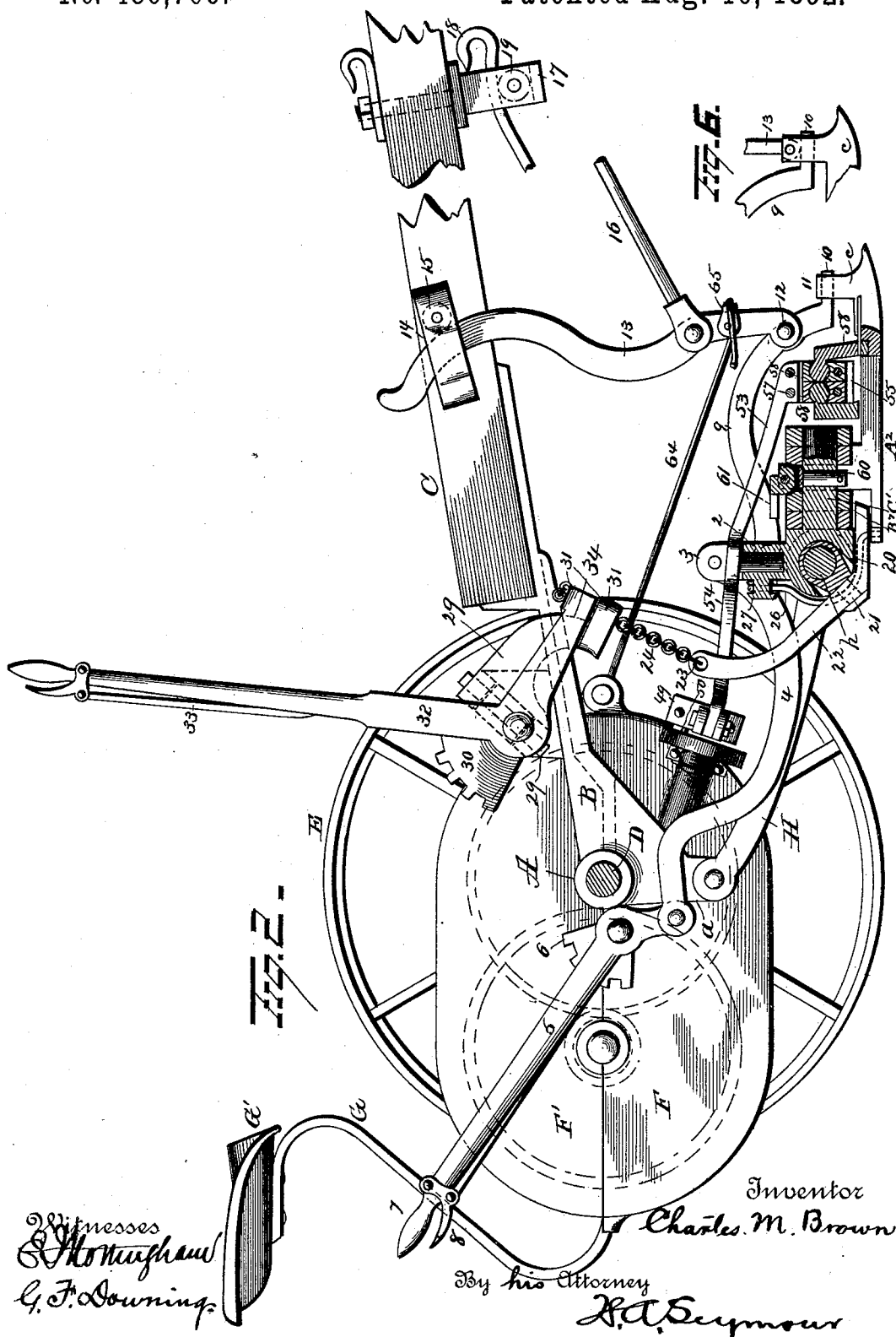
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C. M. BROWN.
MOWING MACHINE.

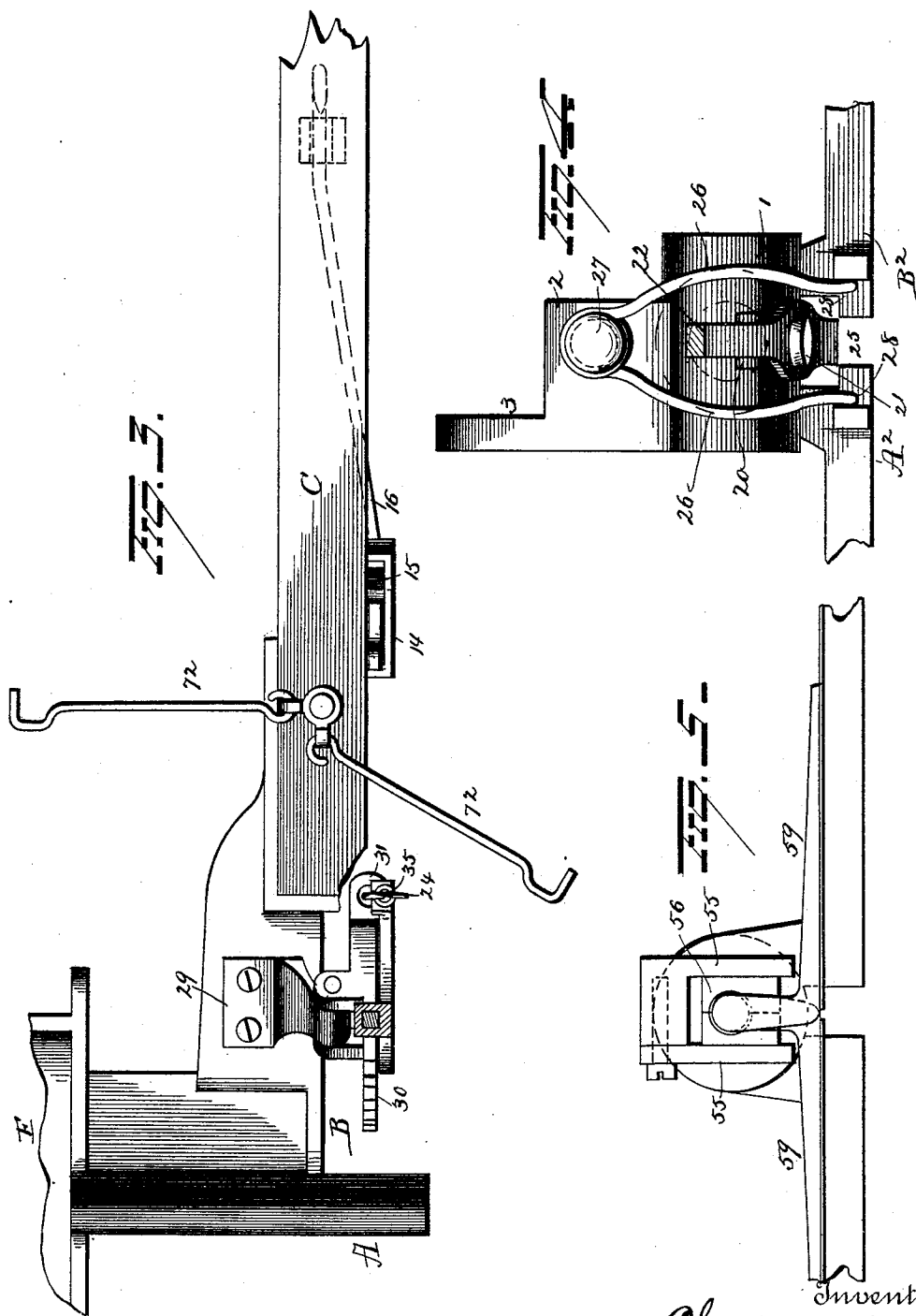
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Patented Aug. 16, 1892.



4 Sheets—Sheet 3.

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4 Sheets—Sheet 4.

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Fig. 7.

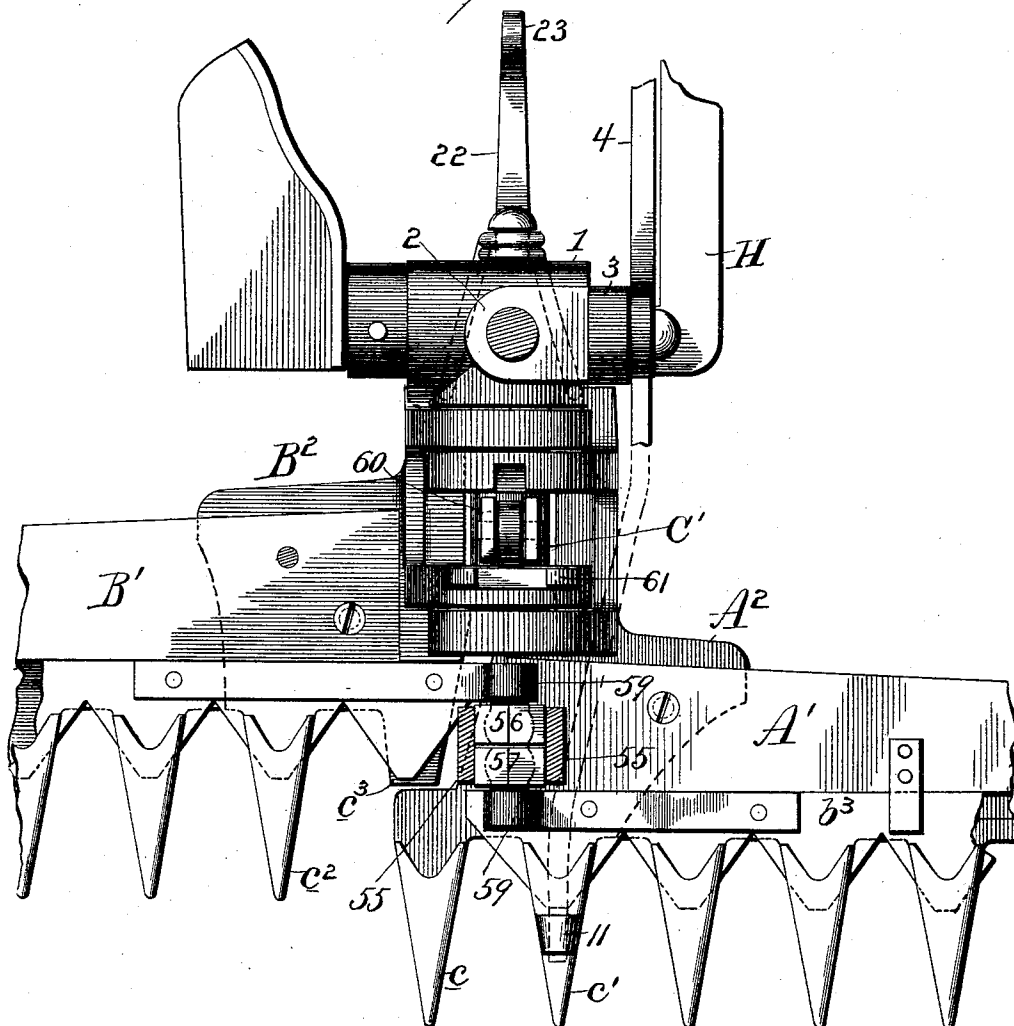
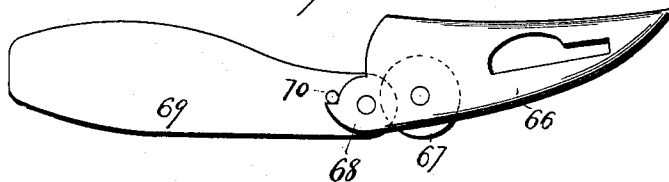


Fig. 8.



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UNITED STATES PATENT OFFICE.

CHARLES M. BROWN, OF CHICAGO, ILLINOIS.

MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 480,706, dated August 16, 1892.

Application filed July 14, 1890. Serial No. 358,601. (No model.)

To all whom it may concern:

Be it known that I, CHARLES M. BROWN, a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mowing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in mowing-machines, and is designed more particularly as an improvement upon the wide-cut mowing-machine for which Letters Patent of the United States were granted to me bearing date the 17th day of September, 1889, and numbered 411,276; and it consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view. Fig. 2 is a longitudinal sectional view. Fig. 3 is an enlarged detached view of the connection of the lifting and swinging lever with the frame. Figs. 4 and 5 are views of certain details. Fig. 6 is a view of a modification. Fig. 7 is an enlarged plan view of the machine, taken at the point where the cutting mechanism is connected with the machine; and Fig. 8 is a detached view of one of the track-clearers G G and connected parts.

A represents a tubular bar forming part of the frame of the machine, from which an arm or bracket B extends forwardly, this arm or bracket being fashioned at its free end for the reception of a tongue C, which is securely bolted thereto. Within the tubular bar A an axle D is revolvably supported, to the free ends of which drive-wheels E are secured. The usual gear-box F, having the hinged cover F', is formed integral with or secured to the tubular bar of the main frame, and in it the gear-and-clutch mechanism hereinafter referred to is located. To the rear end of the gear-box a support G is attached, to which support a driver's seat G' is connected.

H represents a forked push-bar, the forked ends of which are pivoted beneath the tubular bar of the frame, one to a stout arm *a*, projecting downwardly from the latter just below the axle, and the other to the lower portion of the gear-box F. The purpose of mak-

ing these connections at a considerable distance below the axle is to lessen the effect which the rearward thrust of the cutting apparatus has when at work upon the traction of the driving-wheels. This rearward force, acting against the frame at an angle, has the effect of lessening the weight on the wheels, for the greater the angle caused by connecting the push-bar H nearer the axle the greater the effect, and the more readily will the driving-wheels slip on the ground and fail to drive the knife-bars.

The cutting apparatus comprises two finger-bars A' B' of about equal lengths, jointed together by one end of each being secured to shoes A² B², respectively, which shoes are loosely connected or hinged together, as more fully explained farther on. This flexible connection is placed beneath the tongue or draft-pole C, which is located in proximity to one of the drive-wheels of the machine. These shoes A² B² have hinge-like flanges which interlock with each other and are held together pivotally by the pin C', one shoe A² extending forwardly of the other. Attached to the forward shoe A² are two guard-fingers *c c'*, even and continuous with those on the finger-bar A'. The rear shoe B² has one finger *c*² and one projection *c*³, which answers as a cutter-guard and produces, in effect, a continuation of the finger-bar B'. The guard-finger *c*² extends forward from the shoe B² even and continuous with the corresponding parts on the finger-bar B'. The position of the two finger-bars is such that the knife-guard *c*³ comes directly behind the guard-finger *c* and close to it, the first section of knife-bar *b*³ moving behind the guard-finger *c'* when the machine is in operation. All these guard-fingers being spaced or pitched evenly, a cutting apparatus is produced which operates like one continuous bar equally located on both sides of the machine, so that all side draft or strain is equalized.

Loosely mounted on the stud or pintle *h*, which projects laterally from the forward end of the forked push-bar H and made integral with the pin C', is a sleeve 1, having an integral upwardly-projecting arm 2, and projecting upwardly from this arm is a lug 3, to which latter one end of a curved link 4 is pivotally connected. The other end of the link

4 is pivotally connected to the short arm of a lever 5, fulcrumed on a toothed segment 6, secured to the main frame of the machine. The lever 5 is provided at its free end with a handle 7, and a spring-actuated latch 8, connected with the lever, is adapted to engage the toothed segment 6; also pivotally connected at one end to the arm 2 is a bail 9, which projects forwardly from its pivotal connection with said arm and at its forward end is curved downwardly and provided with a pintle 10, adapted to enter loosely the perforation in a lug or ear 11, projecting upwardly from the finger c' of the shoe A^2 . From this construction it will be seen that when the lever 5 is operated the arm 2 will be turned on the stud or pintle h , carrying with it the pin C' and cutting mechanism, whereby the inclination of said cutting mechanism relatively to the horizontal axis of the machine may be readily varied to adapt said mechanism to the inclination of the ground or to avoid an obstacle. At the point 12 on the bail 9 the lower end of a curved upright arm 13 is pivoted, the upper part of which passes loosely through a guide 14, secured to one side face of the tongue C . A roller 15 is journaled in the guide 14, against which the upright arm 13 is adapted to bear. Pivotal connection to the upright arm 13 is the bifurcated lower end of a rod 16, which extends forwardly and upwardly through a guide 17, secured to the under face of the tongue, the forward extremity of the rod 16 being bent to form a hook 18, to which may be attached a doubletree, a roller 19 being placed in said guide 17, against which the rod 16 is adapted to bear. With this construction when power is applied to the hook 18 two forces will be exerted at the point 12 and its attached parts, one of which forces is to lift said parts upwardly and the other to draw the machine forwardly.

Further results attained by connecting the cutting mechanism with the tongue or main frame of the machine are that the finger-bars will run light and easy over the ground, the traction of the driving-wheels will be increased, the thrust on the main frame by its connection with the push-bar will be diminished, and the operator can raise the finger-bars with any desired degree of ease. The lower end of arm 13 may be attached directly to the shoe, or it may be attached to the coupling-piece or push-bar and be made to lift the latter; but with the bail 9 and the connection made with arm 13 at 12 the force exerted on arm 13 will be more evenly balanced around the pivot h , so that there is not much strain exerted on the tilting lever and it can be controlled with greater ease.

The sleeve 1 is cut away at its center for the reception of a collar 20, which is loosely mounted on the pintle h , and loosely pivoted to a pin 21, projecting rearwardly and downwardly from said collar, is a laterally-swinging gag-lever 22. This lever 22 is provided

at its upper end with an eye or loop 23 for the reception of one end of a chain or other flexible connection 24, the other end of said lever extending forwardly and entering a space 25 between the inner ends of the shoes $A^2 B^2$ just below the hinged joint of said shoes. The upper portion of the space 25 is enlarged by notching the inner edges, so as to permit a slight lateral movement of the forward end of the lever 22. A spring 26 is coiled at its center about a lug 27, which projects from the sleeve 1. The ends of this spring project downwardly and are bent under the sleeve 1, their free ends terminating in notches 28, made in the inner edges of the shoes $A^2 B^2$, the action of said spring being to force the shoes apart at this point, so that the forward end of the lever 22 may be more readily forced in between them. The spring 26 also serves to some extent to preserve the rigidity of the two finger-bars relatively to each other.

Secured to the main frame of the machine is a bracket 29, to which is connected by a hinged joint a quadrant 30, the axis of said hinged joint being disposed obliquely, and projecting downwardly and forwardly from said quadrant is a perforated ear 31. Pivotal connection to the quadrant 30 is an operating-lever 32, to which an ordinary latch 33 is connected and adapted to engage the teeth of the quadrant 30. The forwardly-extending short arm 34 of the lever 32 projects to a point nearly over the perforated ear 31, the free end of said arm being provided with a slot 35 for the reception of the upper end of the chain 24, which passes through the perforation in the ear 31. Should the lever 32 be now drawn backward, force will be applied through the medium of the chain 24 to the gag-lever 22, whereupon said lever will turn on its fulcrum and its free end be forced between the shoes $A^2 B^2$ to maintain the finger-bars straight or in line with each other. When the lever 32 is drawn farther backward, the whole cutting apparatus will be raised from the ground and the upper end of the lever 21 made to approach the perforated ear 31 and be guided by said ear. When the lever 32 is swung laterally, a similar movement will be imparted to the gag-lever 22 and said lever made to turn on its pivot 21. The forward end of the lever 22 will engage the inner edge of one of the shoes and cause the same and the finger-bar secured thereto to swing or be raised, thus raising one half of the cutting mechanism higher than the other. It is sometimes desirable to do this, as when an obstacle comes in the line of travel of one of the cutter-bars. Thus it will be seen that through the medium of the lever 32 the entire cutting mechanism may be raised or lowered, or by means of the same lever one end of the cutting mechanism may be raised higher than the other.

Within the gear-box F a drive-pinion 36 is loosely mounted on the axle, and on one side of

the hub of this pinion clutch - teeth 37 are formed. A movable clutch-section 38, with similar teeth 39 to the teeth 37 and adapted to interlock therewith, is mounted on the axle of the machine, so that the feather on the latter extends loosely into a corresponding groove in the clutch-section, permitting the said section to slide on the axle, but carrying it with it as it revolves. Shipping-lever 41 is pivoted on the gear-box, with its forked end 42 spanning the clutch-section and entering the groove therein, while the other end projects rearwardly in proximity to the driver's seat, where it may be easily reached and operated to lock or unlock the drive-pinion 36 on the axle, thereby throwing the machine in or out of gear. This pinion 36 is meshed with a small pinion 43 on shaft 44 in the rear of the gear box or case, and integral with or secured to said pinion 43 is a larger bevel-pinion 45, which meshes with and drives a bevel-pinion 47 on the driving-shaft 48, which shaft projects forwardly and downwardly and is provided at its forward end with a crank-disk 49, from which a wrist-pin 50 projects, the end of said wrist-pin being made in the form of a ball to fit loosely in sockets formed in a divided block at the inner end of a pitman 51. The pitman 51 extends in a horizontal direction and is pivotally connected at its outer end in the bifurcated end of a link 52. Pivotal-ly connected to the other end of the link 52 and extending therefrom at right angles is a lever 53, having a curved portion 54 for the accommodation of the chain 24. At or near its center the lever 53 is pivotally connected to the arm 2 of sleeve 1, on which it is adapted to have a horizontal vibratory movement through the medium of the pitman 51 and its eccentric connection with the drive-shaft 48. The forward end of the lever 53 extends beyond the hinged connection of the shoes A² B² and is provided at its free extremity with two parallel plates 55 55, said plates being adapted to embrace two journal-boxes 56 57. The boxes 56 57 are each made in two parts and adapted to receive the spherical end of a pin 58, which projects from a bracket 59, there being two such brackets—one secured to each knife-bar. Thus it will be seen that when the lever 53 is vibrated as above explained the knife-bars will, through their swivel connection with said lever, be reciprocated in unison with each other.

In order to provide means for locking the cutting mechanism, a perforation is made in the coupling-pin C' between the ears of the shoes A² B², and in this perforation a pin 60 is inserted, said pin having a bifurcated upper end, in which is pivoted a forked piece 61, adapted to be swung upwardly and embrace the lever 53, whereby the vibrations of said lever will be prevented and the knife-bars locked.

One of the drive-wheels is placed as close as possible to the axis of the cutter-bars and still permit the free movement of the several

levers. Thus said drive-wheel will come partially within the track made by the shoes through the cut grass. In order to provide a cleared track for said wheel and thus prevent the grass from being packed down by the drive-wheel, fenders or deflectors 62 63 are provided, the fender or deflector 62 being secured to the shoe B² and the fender or deflector 63 being secured to the outer end of the pintle *h*. To further prevent the cut grass from lodging in the machinery, two rearwardly-extending guard-bars 64 are provided, said bars being secured at their forward ends to a clip 65, attached to the upright arm 13.

At the ends of the finger-bars track-clearers 66 are secured, in which rollers 67 are mounted. Projecting from the rear ends of each track-clearer 66 is an ear 68, having a curved rear edge, to which ears rearwardly-projecting wings 69 are pivotally connected, each of said wings having a pin 70, adapted to move over a portion of the curved edge of the lug and limit the movement of the wings in one direction and in the other direction by engagement with a shoulder on the ear 66.

When the mower is not in use, the outer ends of the finger-bars may be raised to nearly an upright position and there secured to the draft-pole by hooks 72 or otherwise.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a mowing-machine, the combination, with a push-bar which terminates in advance of one of the drive-wheels, of two cutting mechanisms connected to said push-bar, a fender secured to one of said cutting mechanisms and a fender secured to the push-bar, whereby a track will be cleared for said drive-wheels, substantially as set forth.

2. In a mowing-machine, the combination, with a push-bar having a pintle which terminates at a point in advance of one of the drive-wheels, of two cutting mechanisms hinged to said pintle, a fender secured to one of the cutting mechanisms in close proximity to the hinged connection thereof, and a fender secured to said pintle, substantially as set forth.

3. In a mowing-machine, the combination, with the cutting mechanism and the tongue, of an arm pivotally connected with the cutting mechanism and having loose sliding connection with the tongue and a draw-bar pivotally connected to said arm and having loose sliding connection with the tongue, substantially as set forth.

4. In a mowing-machine, the combination, with the cutting mechanism and the tongue, of a substantially S-shaped arm pivotally connected with the cutting mechanism and passing through a guide on the tongue and a draw-bar pivotally connected to the S-shaped arm, substantially as set forth.

5. In a mowing-machine, the combination, with the cutting mechanism and the tongue, of a substantially S-shaped arm pivotally

connected with the cutting mechanism, a guide on the tongue through which said lever passes, a roller in said guide, and a draw-bar connected to said S-shaped arm, substantially as set forth.

6. The combination, with a push-bar and connected cutting mechanism, of a lever fulcrumed on the cutting mechanism approximately over the point of connection between the cutting mechanism and the push-bar and rearward of the cutter-bar, said lever connected at one end with the cutter-bar, a pitman, and a link connecting one end of the lever with the pitman, substantially as set forth.

7. The combination, with the main frame, a push-bar, and cutting mechanism, of an arm pivotally connected with the push-bar, a bail extending from said arm to the forward end of the cutting mechanism, a link pivotally connected with the arm, an operating-lever connected with the link, and a draft attachment extending forward from the bail, substantially as set forth.

8. In a mowing-machine, the combination, with a main frame, push-bar, and cutting mechanism, of an arm pivotally connected with the push-bar, a link connected pivotally with the arm and extending rearwardly therefrom, an operating-lever connected to the rear end of the said rearwardly-extending link, a bail connecting the pivoted arm with the cutting mechanism, and a draw-bar connected with the cutting mechanism, substantially as set forth.

9. In a mowing-machine, the combination, with a main frame, a push-bar, and cutting mechanism, of an arm pivotally connected with the push-bar, a rearwardly-extending link connected at its forward end to the pivoted arm, an operating-lever connected to the rear end of said rearwardly-extending link, a bail connected at one end to the pivoted arm and at its forward end to the cutting mechanism, an arm pivotally connected to this bail and extending through a guide on the tongue, and a draw-bar pivotally connected to the last-mentioned arm, substantially as set forth.

10. In a mowing-machine, the combination, with a main frame, a push-bar, and a sleeve loosely mounted on the push-bar, of shoes hinged to the sleeve, finger-bars and knife-bars supported by said shoes, a collar loosely mounted on the forward end of the push-bar, a gag-lever pivotally connected to said collar

and adapted to enter between the inner edges of the shoes, means for operating said gag-lever, and a spring connected with the loose sleeve and terminating in the space between the shoes and bearing at its respective ends against said shoes, substantially as set forth.

11. In a mowing-machine, the combination, with a main frame, a push-bar, cutting mechanism hinged to the push-bar, and a gag-lever, of a toothed segment hinged to the main frame, a perforated arm projecting from said segment, an operating-lever pivoted to one face of the quadrant, and a flexible connection between the short arm of the operating-lever and the gag-lever, said connection passing through the perforated arm on the quadrant, substantially as set forth.

12. In a mowing-machine, the combination, with a main frame, a push-bar, cutting mechanism hinged to the push-bar, and a pivoted gag-lever, of a quadrant hinged to main frame, the axis of said hinged connection being disposed obliquely to the line of draft, a perforated arm projecting from said quadrant, an operating-lever pivotally connected to one face of the quadrant, a finger-bar connected with the lever and adapted to engage the quadrant, and a flexible connection between the short arm of the operating-lever and the rear end of the gag-lever, said flexible connection passing through the arm on the quadrant, substantially as set forth.

13. In a mowing-machine, the combination, with the main frame, driving mechanism, a push-bar, two finger-bars hinged to the push-bar, and a knife-bar on each finger-bar, of an arm pivotally connected with the push-bar, a gag-lever, a horizontally-vibrating lever pivotally connected at its center to said arm and connected at its forward end to the knife-bars by a swivel connection, the rear end of said lever being curved around the gag-lever and having a link pivotally connected to its rear end, and a pitman connecting said link with the driving mechanism, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

CHARLES M. BROWN.

Witnesses:

WILLIAM CHANEY,
JOSEPH KRISTAN.