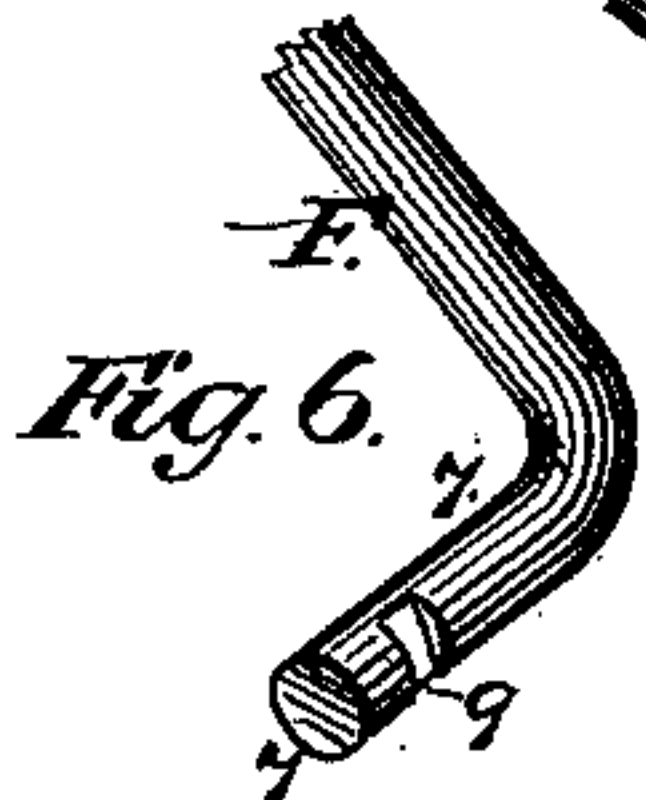
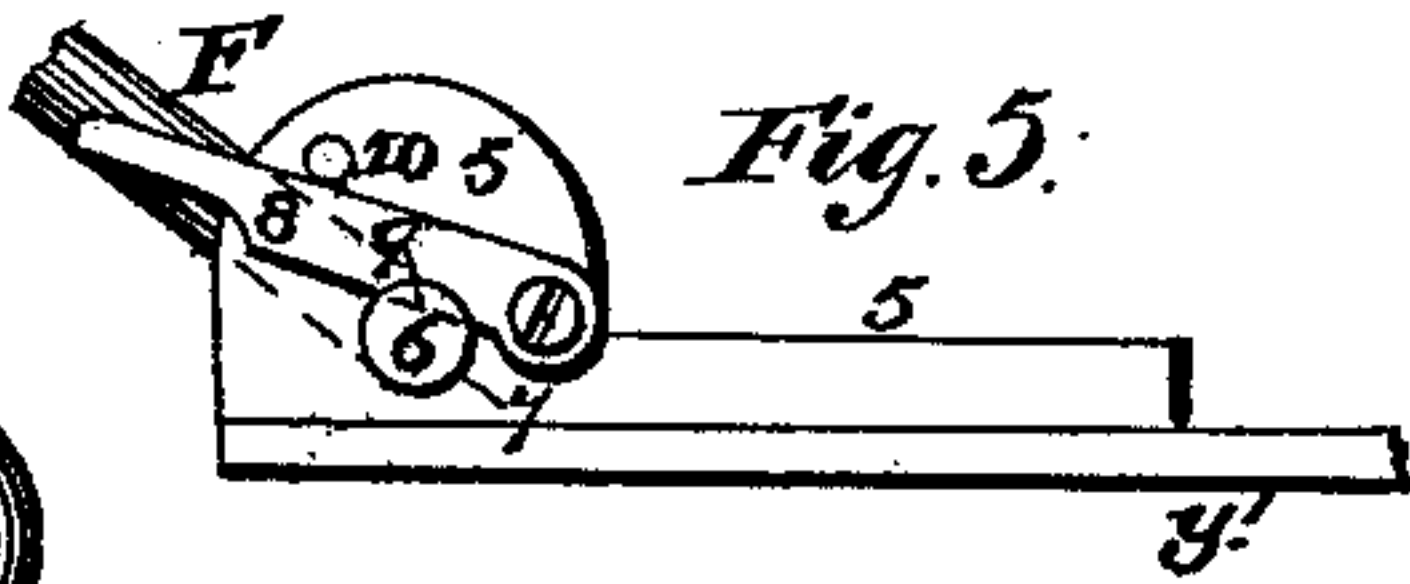
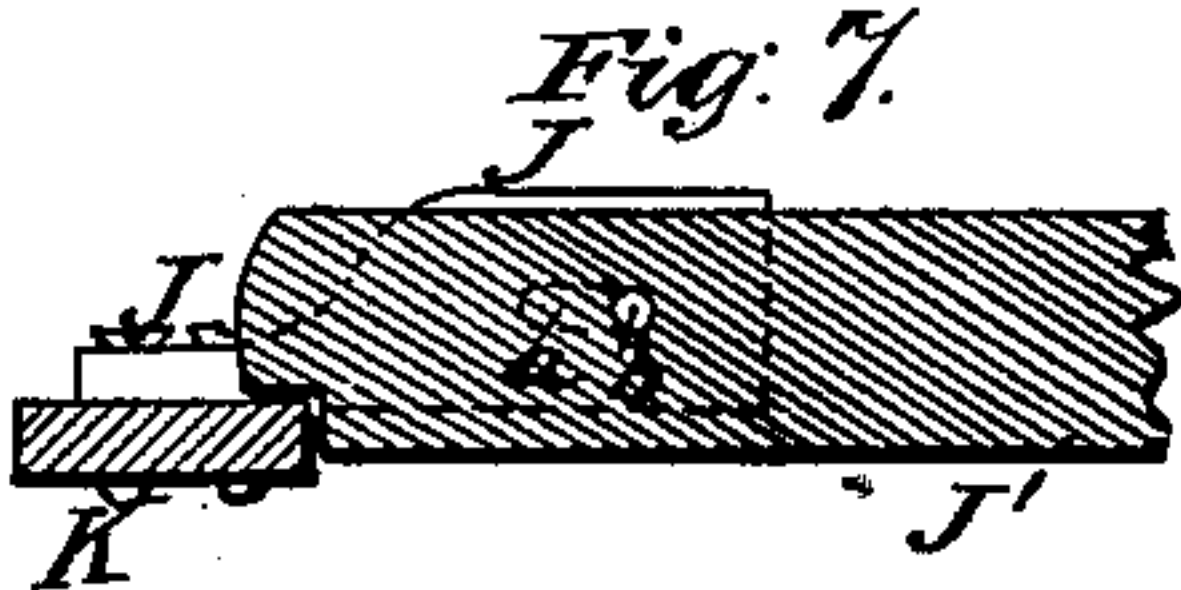
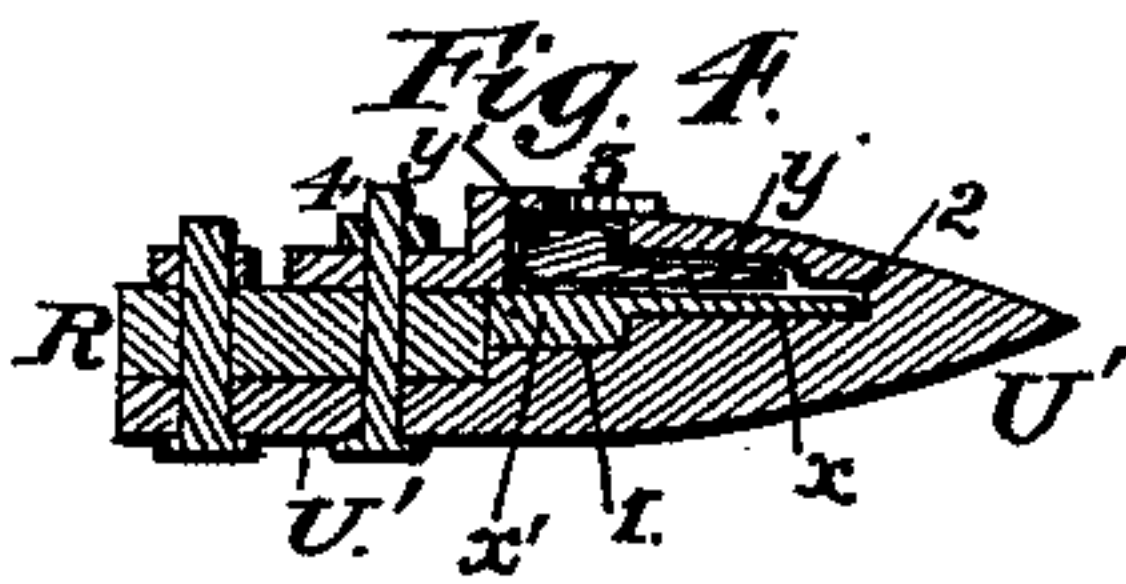
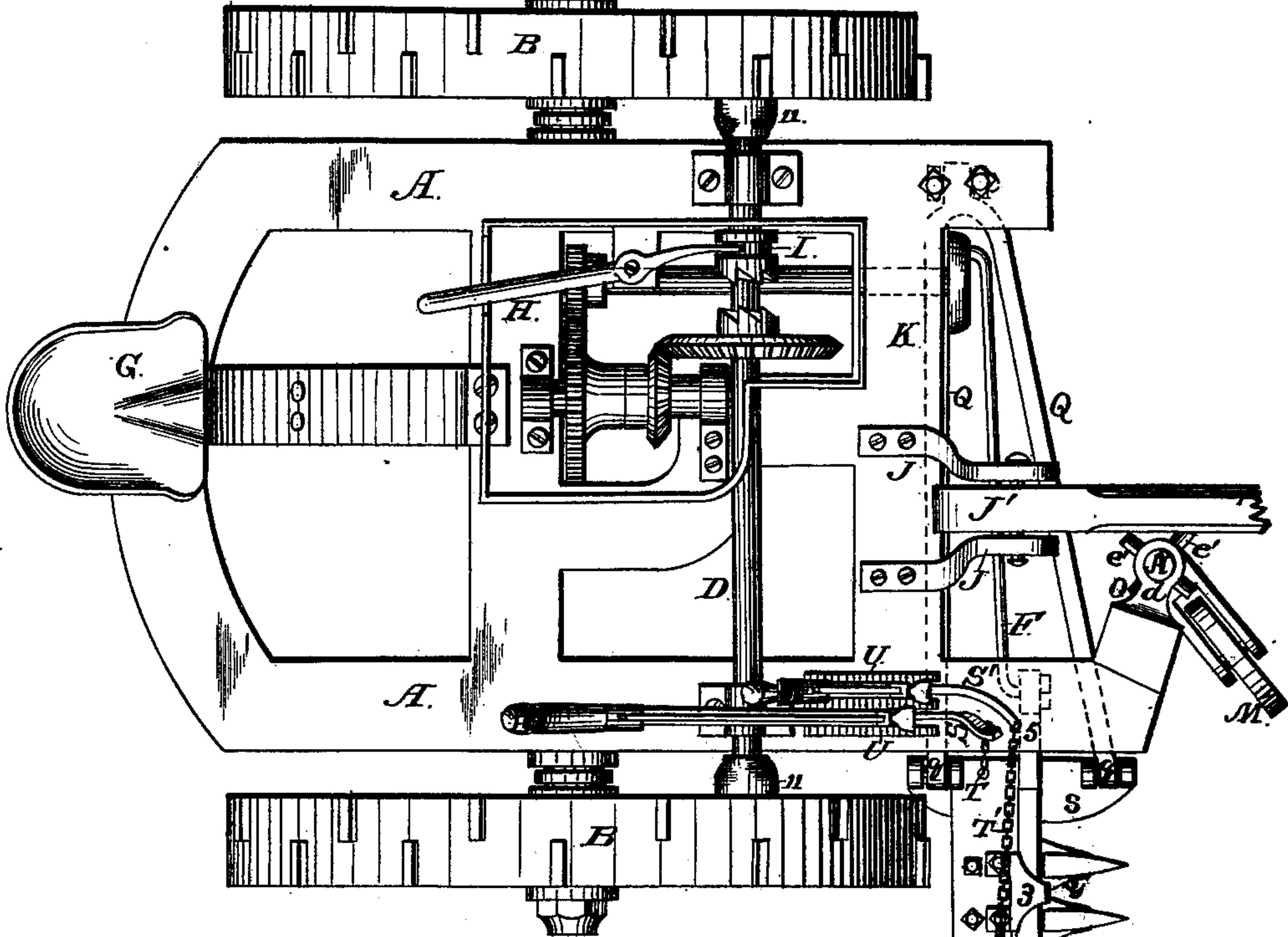


M. H. JOHNSTON.

Mower.

No. 222,280.

Patented Dec. 2, 1879.



Attest:
F. B. Brock
D. G. Stuart

Inventor:
Michael H. Johnston
by C. Hannay
Atty.

M. H. JOHNSTON.
Mower.

No. 222,280.

Patented Dec. 2, 1879.

Fig. 2.

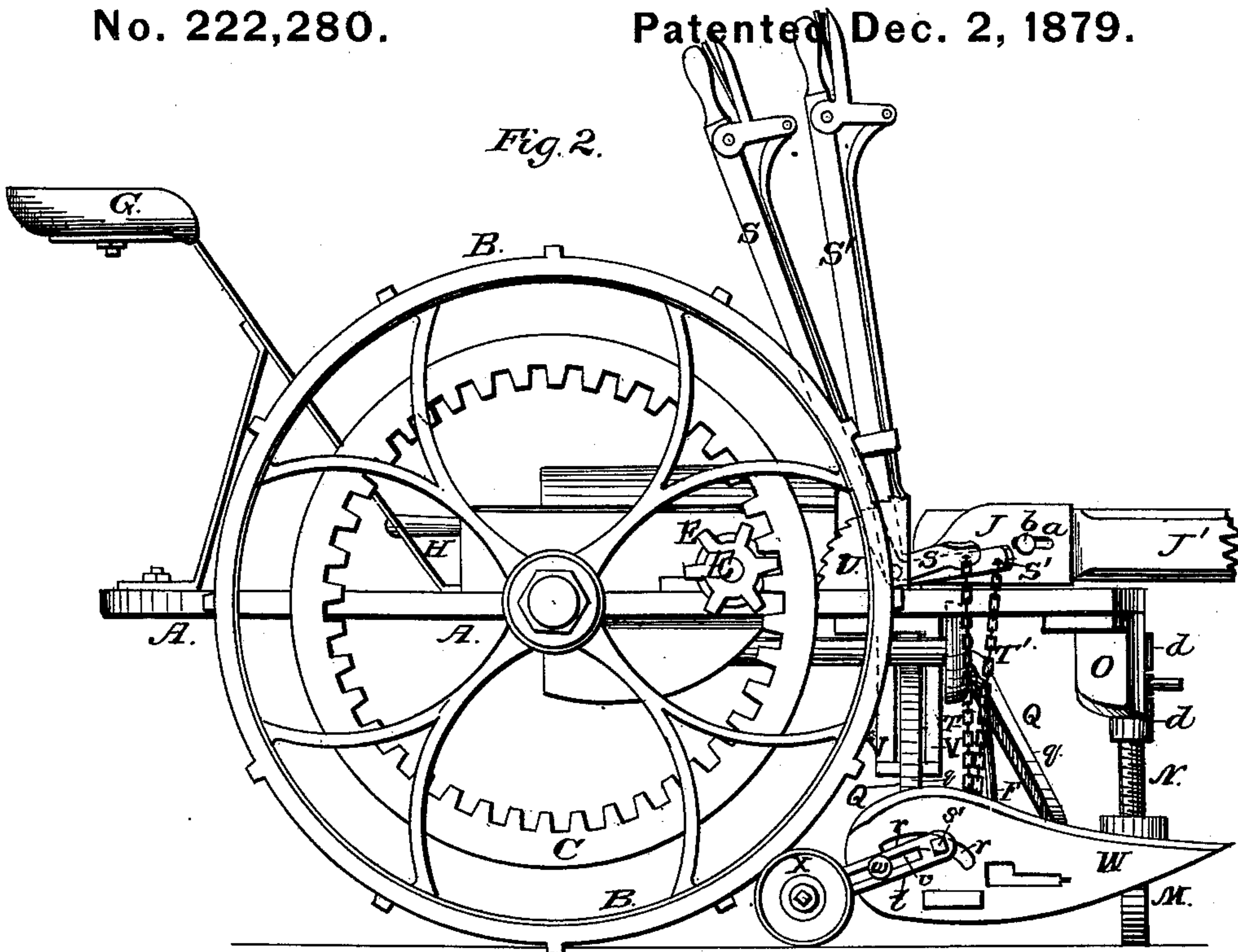
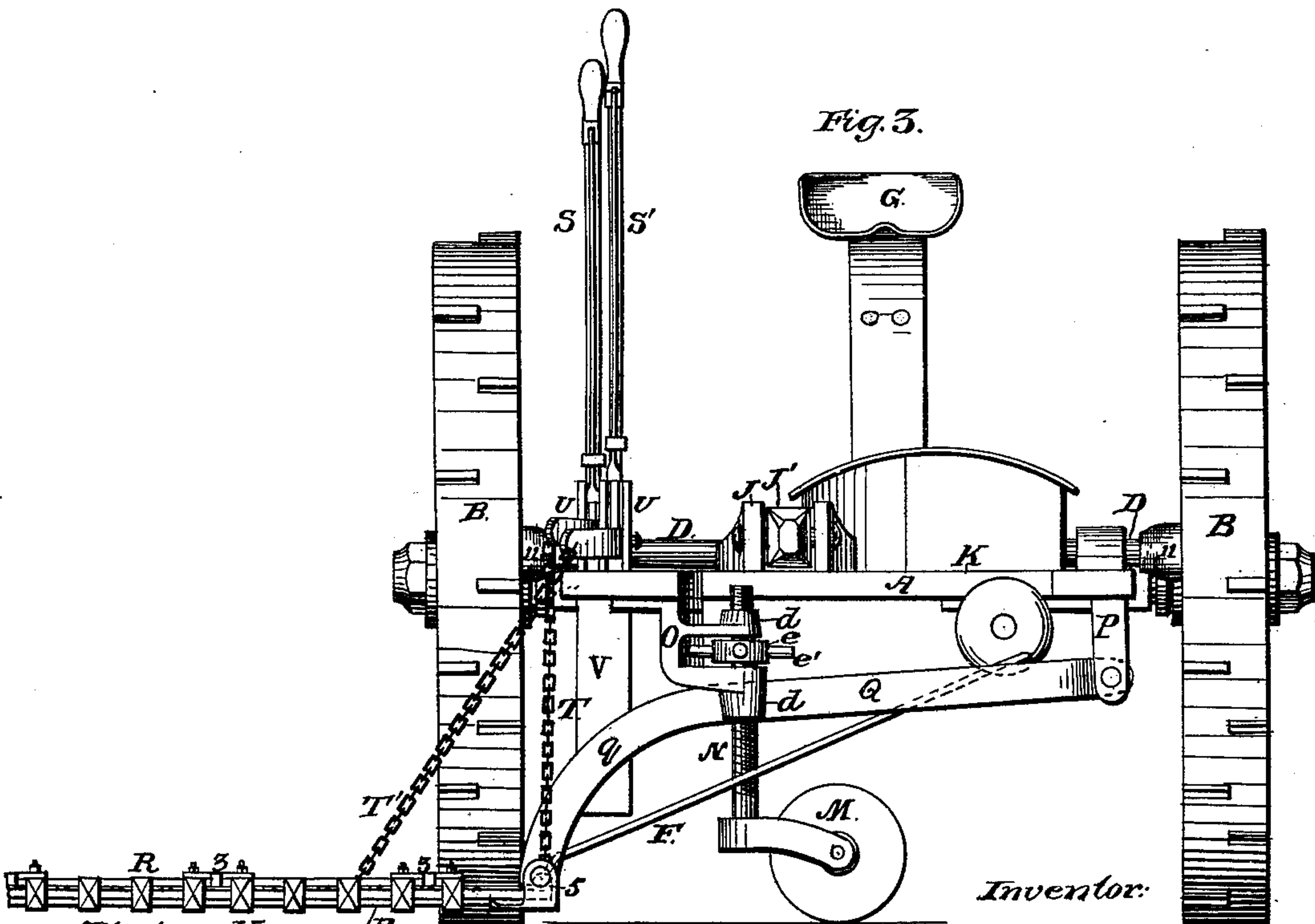


Fig. 3.



Inventor:

Attest:
J. P. Brock
D. G. Stuart

Michael H. Johnston
by P. Hannay
Att'y.

UNITED STATES PATENT OFFICE.

MICHAEL H. JOHNSTON, OF ALEDO, ILLINOIS.

IMPROVEMENT IN MOWERS.

Specification forming part of Letters Patent No. 222,280, dated December 2, 1879; application filed February 17, 1879.

To all whom it may concern:

Be it known that I, MICHAEL H. JOHNSTON, of Aledo, in the county of Mercer and State of Illinois, have invented certain new and useful Improvements in Harvesters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 represents a top or plan view of a mowing-machine to which my improvements have been applied; Fig. 2, a side elevation of the same, the tongue being represented as broken off. Fig. 3 represents a front elevation of the same, the outer shoe and end of the cutter-bar being broken off. Fig. 4 represents a central longitudinal section through one of the fingers or snake-heads, and across the finger-bar, stationary and reciprocating cutters, and illustrates their construction and relation to each other. Fig. 5 represents a side elevation of the sickle or cutter-bar head, showing my improved method of connecting it with the driver or pitman-rod, the latter and sickle-bar both being broken off. Fig. 6 represents a detached view of the lower end of the pitman-rod, showing the construction of that part by which it is connected to the sickle-eye. Fig. 7 represents a detail view, being a vertical longitudinal section of a portion of the rear end of the tongue and of the front cross-bar of the main frame, and illustrates the mode of constructing and connecting the tongue to the hounds of the machine.

My invention relates to certain new and useful improvements in mowing-machines; and it consists, first, in a new and improved mode of raising and lowering the heel of the shoe at the outer end of the cutter-bar, so as to adjust it to the height required; secondly, in a new and improved mode of securing the stationary sickle to the cutter-bar; thirdly, in a new and improved mode of securing the cutter-bar to the main frame of the machine, whereby it is rendered capable of a free vertical movement, by which to accommodate itself at either end to the inequalities of the

ground over which it passes, and by which, at the will of the operator, it can be raised or lowered at either or both ends; fourthly, in a new and improved mode of connecting the tongue of the machine to the hounds, by means of which the outer end of the tongue of the machine is left free to rise or fall while the horses are dragging the machine forward, but is rendered stiff and rigid in backing.

To enable others skilled in the art to make, construct, and use my invention, I will describe its parts in detail.

In the drawings, A represents the main frame, supported upon the driving-wheels B, within which are secured the gear-wheels C, that impart motion to the sickle-bar through the shaft D, pinions E E, and intermediate gearing, (shown in Fig. 1,) and pitman-rod F.

G represents the driver's seat, and which is secured in any suitable way to the main frame A at a point in rear of the axial spindles of the driving-wheels, and thus enables the driver's weight to counterpoise to that extent the weight of the front part of the machine. This arrangement of the seat brings the foot of the driver within range of the lever H, which operates the clutch-gear I of the machine, and thus enables him to throw, by his foot, the cutting apparatus in or out of gear at will, and that without taking his attention from the horses.

The hounds J are secured to the upper side of the front cross-bar, K, of the machine, and have an elongated opening, *a*, formed in their side for the reception and passage of the bolt *b*, which connects and attaches the tongue J' to the hounds. The bolt *b* for this purpose passes through both hounds and tongue, and is secured in position in any known way. The length of slot *a* is such that when the horses advance to draw the machine it allows the rear end of the tongue, when its front end is raised, to pass freely downward between the front edge of the front cross-bar, K, and the pivotal bolt *b* of the tongue, and so, also, that when the horses are backed a portion of the rear end of the tongue will extend over and rest upon the front cross-bar, K, and thus render the tongue rigid with respect to the machine. For this purpose I prefer to notch out a piece from the under side of the rear end of

the tongue, as seen in Fig. 7, so that the projecting part only that is left will project over the front bar, K, while the inner end of the notched part will form an abutment to bear against the front edge of bar K in backing, and thus prevent strain on the bolt *b*.

The front part of the machine is supported on a caster-wheel, M, the stem or spindle N of which is supported in bearings *d*, formed at the arm ends of a bifurcated bracket, O, there being a bearing formed in the end of each of the said arms *d*, and which form the bifurcation of the bracket O. Between the ends of the two bearings *d* *d* is arranged a thumb-screw nut, *e*, through which passes the spindle N of the caster-wheel, and which for this purpose is screw-threaded. By means of this nut the height of the front end of the machine is raised or lowered, according as the nut is turned to raise or lower the spindle in the bearings. To facilitate this operation nut *e* is provided with short arms *e'*, to increase the leverage on the nut; but while I prefer to use the arms on the nut they are not absolutely essential to the operation. The bracket O is firmly bolted to the front end of the side beam of the main frame A of the machine.

To the under side of the front end of the side rail of the main frame next the outer driving-wheel are firmly secured two pendent lugs or arms, P, to the lower ends of which is hinged or pivoted the frame Q, and to the inner end of the latter is flexibly connected the inner end of the finger-bar R.

Frame Q consists of two bars, *q* *q*, firmly secured or welded together at the end, by which they are pivoted to the arms P, whence they are made to diverge as they approach the cutter-bar, and are then curved downwardly and pivotally attached to the inner shoe, *s*, to which the inner end of the finger-bar is secured, in the manner illustrated in Figs. 1, 2, and 3 of the drawings. This mode of connecting the finger-bar to the main frame by means of a hinged connecting-frame, P, and the finger-bar itself to the latter by a similar joint, enables both the outer and inner ends of the finger-bar automatically to rise and fall independently of the other, and thus accommodate themselves to the inequalities of the ground.

It also enables the driver, through the instrumentality of suitable devices, as by the L-shaped levers S S' and chains T T', attached, respectively, to their lower ends and to the finger-bar at will, either to raise or lower the outer or inner end of the finger-bar, or both simultaneously, and to hold them in any required position by means of the segmental racks U.

To the under side of the inner side rail of the main frame, next the finger-bar, is secured a slotted pendent guide-bracket, V, through the slot of which projects the inner bar or arm, *g*, of the supporting-frame Q of the finger-bar R. This slotted guide-bracket serves to sustain the finger-bar and cutting apparatus in their proper relative position with respect to the

balance of the machine, and at the same time leaves them free to rise and fall, as the undulations of the ground may require, or as the will of the driver may dictate.

The outer end of the finger-bar R is secured to and supported upon the shoe W, which may be of the usual or other suitable and known form. The rear end of this shoe I mount upon an adjustable supporting-wheel, X, for the purpose of raising or lowering it at will. This adjustment is effected by means of a curved slot, *r*, made in the side of the shoe W, and a screw-bolt, *s'*, which is made to pass through slot *r* and a bolt-hole in the end of the arm *t*.

On a spindle, *u*, at the lower end of arm *t*, is mounted the supporting-wheel X. To aid this purpose the arm *t* is also provided with a slot, *v*, through which passes a small pivotal bolt, *w*, into the side of the shoe, and to which it is secured in any desirable way.

Pivot *w* is arranged in the shoe at a point below and at or near the rear end of slot *r* in said shoe, so that, by adjusting the upper end of arm *t* at or near the front end of slot *r*, it will cause the arm *t* to turn upward at its lower end on the pivot *w*, and thus lower the shoe, and vice versa—that is to say, by adjusting it at or near the rear end of slot *r* it will depress the lower end of arm *t*—i. e., the end on which wheel X is mounted—and thereby raise the shoe, and with it the outer end of the finger or cutter bar R. The shoe once adjusted to the height required is firmly held in that position by tightening the nut of screw-bolt *s'*.

The finger-bar R and fingers U' are secured together in the usual way. (See Figs. 1 and 4, in which latter figure is shown that peculiar construction of the finger which adapts it to the use of stationary in connection with ordinary reciprocating cutters and cutter-bars.)

x represents the stationary cutters, and *x'* their cutter-bar, while *y* represents the reciprocating cutters, and *y'* their cutter-bar. The stationary cutters *x* may consist of a single plate of steel cut into proper shape and secured to cutter-bar *x'*, or they may be made separately and secured separately to their cutter-bar. The latter mode I prefer.

In securing the stationary cutters *x* to the finger-bar a notch, 1, is made in the fingers of a width just sufficient to receive their bar *x'*, and of a depth nearly but not quite sufficient to bring the upper side of these cutters flush with or rather slightly above the upper side of the finger-bar. The forward end of each of these cutters *x* is made to fit into a slot, 2, formed in and at or near the front end of the fingers, and is there held securely in place by a device shortly to be described. These stationary cutters *x*, I prefer to make longer than the reciprocating cutters, and to so arrange them with respect to the latter that their outer ends shall project beyond the outer ends of the latter. Thus constructed and arranged, the stationary cutters are then rigidly secured to the finger-bar R and fingers U' by

means of removable clamps 3, which for this purpose are made to slightly project at their front end and under side over the cutters x , and in that position then securely bolted to the finger-bar, thus firmly clamping the cutters x and their bar x' between the clamps 3 and the fingers, so that the clamps 3 may be enabled to project sufficiently far over the cutters to clamp them firmly. They are provided with slots instead of simple bolt-holes for the passage of the bolts 4, and thus are enabled to be adjusted toward or from the sickle-bar, as required.

The slots I prefer; but the clamps may be simply provided with bolt-holes, if properly fitted in the first instance. Instead of using two or more of these clamps 3, a single one of proper length may be used; but I prefer to use four or more.

By securing the stationary cutters x to the finger-bar R and fingers U' in the manner described they can be removed, repaired, or sharpened, and afterward replaced with great expedition and ease.

The reciprocating cutters y are made, operated, and applied to the machine in the ordinary way, but have the eye or sickle-head of their bar y' , to which the pitman is applied, constructed in an improved manner, for the details of which see Figs. 5 and 6.

In Fig. 5, y' represents a portion of the reciprocating sickle or cutter-bar, broken off, and 5 the sickle-head, or that part of the sickle-bar to which the driver or pitman F is connected or attached. For this purpose the eye-hole 6 in the sickle-head 5, for the reception of the bent end 7 of the pitman, is made in the usual manner. In the upper side of the bent end 7 is cut a notch, 9, at a point sufficiently far from the angle of the bend as to just barely pass through and project on the other side of the sickle head 5. Into this notch fits a latch, 8, pivoted to the side of the sickle-head, and which thereby holds the pitman in place when fully inserted in the eye.

To prevent the latch 8 from getting out of place a push spring-stop, 10, is arranged immediately above it, at such point as will cause it to bear on the upper edge of latch 8 when the latter is in place, and thus lock the pitman to the eye of the sickle-bar, as shown in Fig. 5.

This mode of connecting the pitman and sickle-bar allows the latter and cutter bar to accommodate themselves to the inequalities of the ground, as also to raise and lower the cutter-bar at will. It also presents a simple and easy method of connecting and disconnecting the two when it is desired to sharpen or repair the sickles, as all that is necessary to do is to press spring-stop 10 back into the eye part 5 and raise drop-latch 8, when the pitman can be instantly withdrawn and the two disconnected.

The push spring-stop 10 is made in the usual way of inserting push spring-pins, and need not be particularly described.

The pinions E E, which receive motion from

the driving-wheels B, and impart it, through suitable gearing, to the cutting apparatus, are mounted loosely on their shaft D, and have on their inner side a ratchet-wheel, which, as the machine advances, engages with a pawl or detent suitably secured to the inner side of a thimble or collar, 11, made fast to their shaft D. By this means the machine, as it advances, makes the ratchet-teeth of the pinions E engage with the pawls in the collars or thimbles 11, and thus causes the shaft D to revolve, and thereby drive the sickle, should the driving-clutch I be in gear, while when the machine is backed no motion whatever is imparted to the shaft, thereby reducing friction.

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

1. In combination with the finger-bar R of a mowing-machine, an outer shoe, W, provided with a slot, r , and pivotal pin w , when such shoe, thus constructed, is used in connection with an adjustable supporting wheel, X, mounted on a spindle, u , formed on the end of a slotted arm, t , the other end of which is secured to the shoe by means of a screw-bolt or equivalent device passing through the slot r of the shoe, the whole operating in the manner substantially as and for the purpose set forth.

2. The combination of one or more removable clamps, 3, with the finger-bar R, stationary cutters x , and fingers U, said clamps serving both to hold the stationary cutters and form guides for the cutter-bar, substantially as described, and for the purposes set forth.

3. In combination with a finger-bar and its cutting apparatus, flexibly connected at its inner end to one end of a frame, Q, the other end of which is hinged to the main frame of the machine, the L-shaped levers S S', arranged in juxtaposition, so that they may be operated together or separately, chains or links T T', and segmental racks U, substantially as and for the purpose set forth.

4. The means herein described of rendering the tongue flexible while the horses are dragging the machine, and rigid while backing, to wit: hounds J J, provided with longitudinal slots a , by means of which the tongue is pivoted to the hounds by a bolt, b , the latter being passed through the tongue at such point at its rear end that when the bolt rests in the forward end of the slot a the tongue will be free to move up and down, but when, as in backing the machine, it bears against the rear end of the slot, then the rear of the tongue shall rest upon the front cross-bar, K, and thus be rendered rigid, substantially as set forth.

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

M. H. JOHNSTON.

Witnesses:

C. S. McMICHAEAL,
JOHN THOMSON.