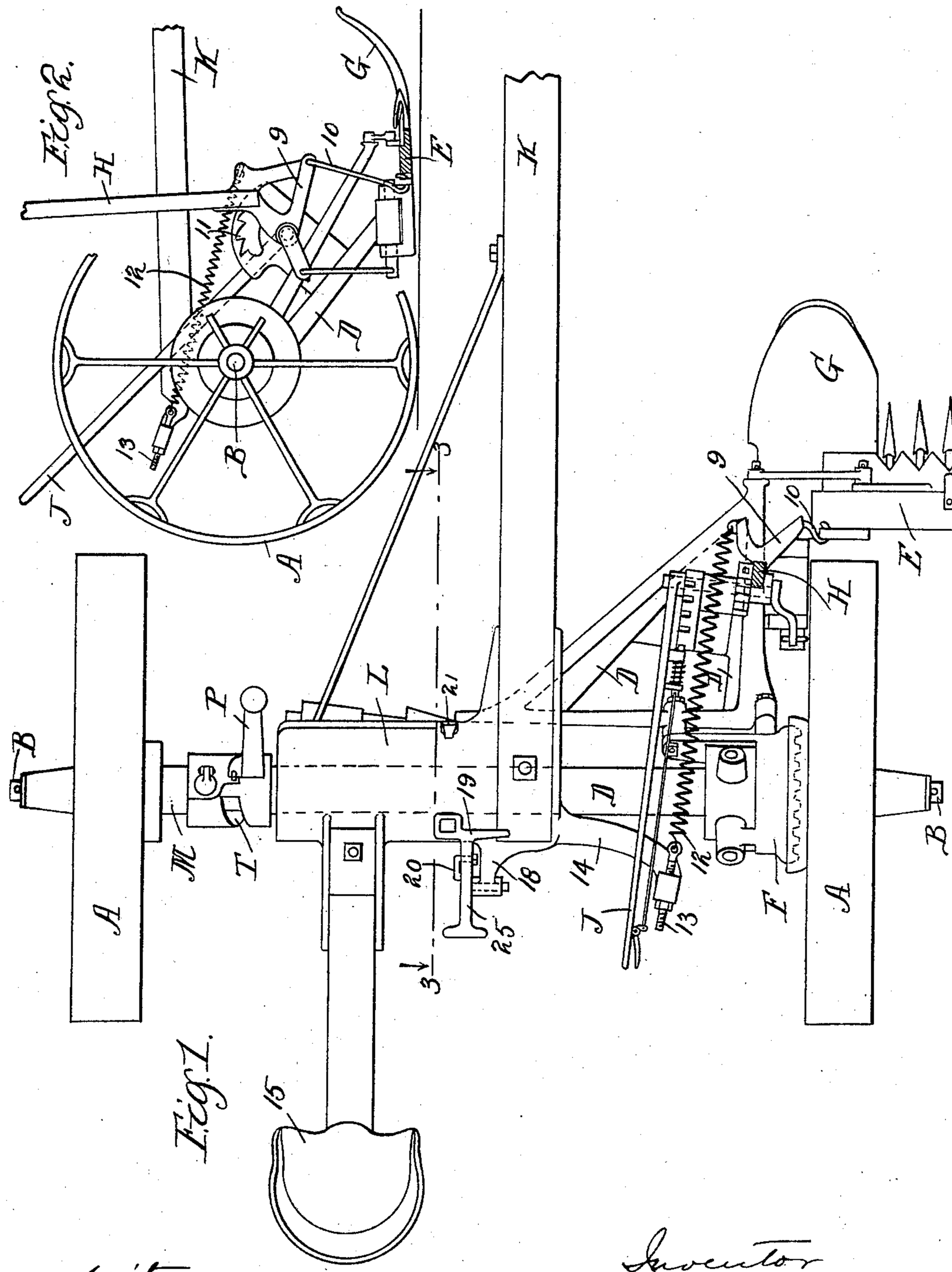
(No Model.)

2 Sheets—Sheet 1.

M. KANE.

MOWER.

No. 580,868. Patented Apr. 20, 1897.



Witnesses
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Inventor
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(No Model.) 2 Sheets—Sheet 2

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Fig. 3.

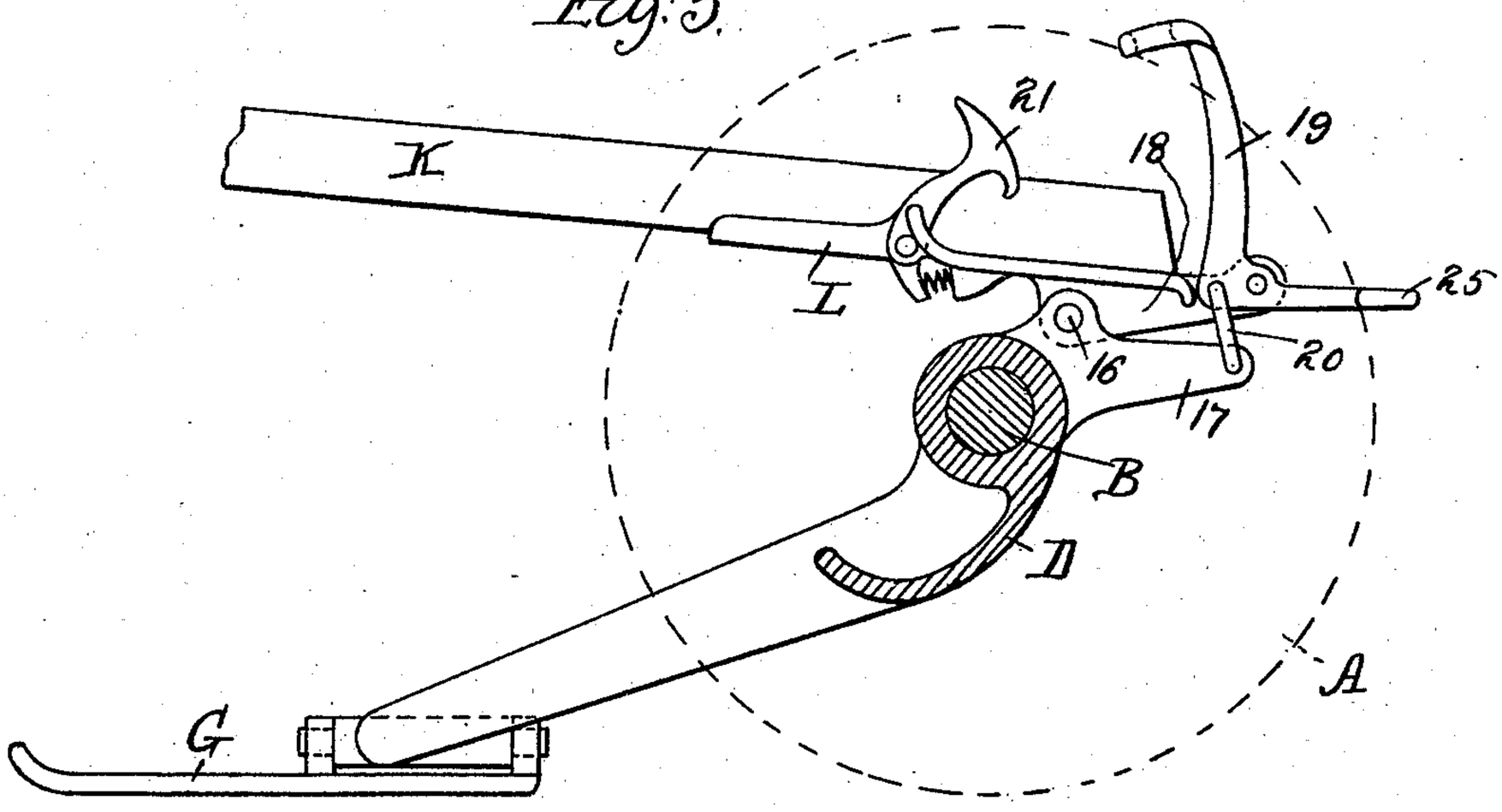


Fig. 4.

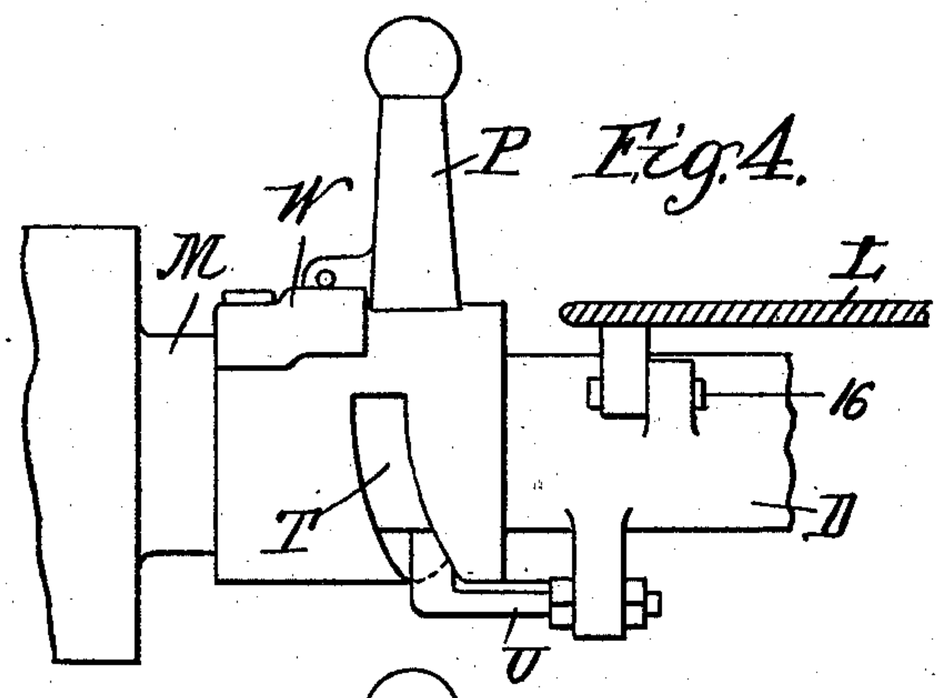


Fig. 5.

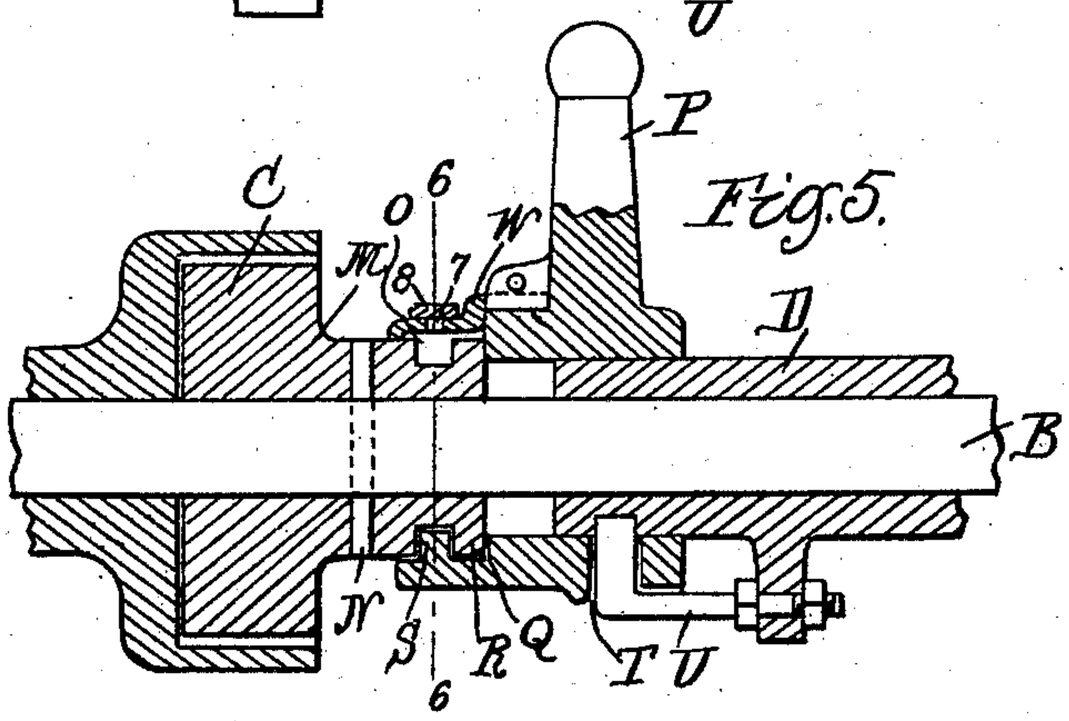
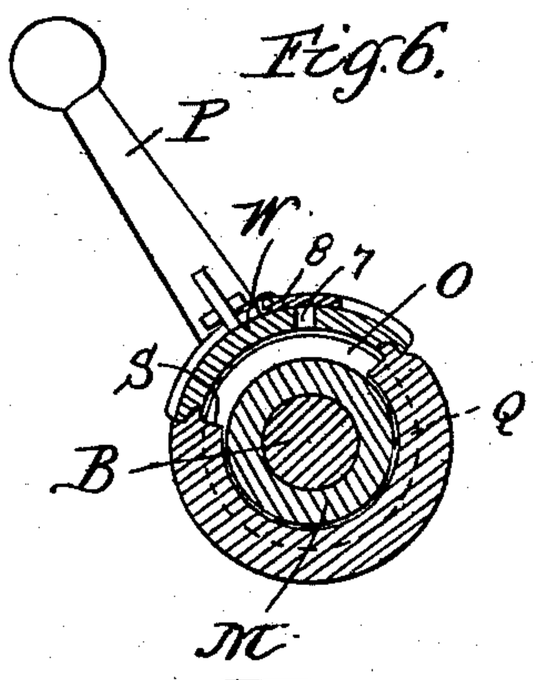


Fig. 6.



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UNITED STATES PATENT OFFICE.

MAURICE KANE, OF AUSTIN, ILLINOIS.

MOWER.

SPECIFICATION forming part of Letters Patent No. 580,868, dated April 20, 1897.

Application filed September 18, 1896. Serial No. 606,213. (No model.)

To all whom it may concern:

Be it known that I, MAURICE KANE, a citizen of the United States, residing at Austin, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Mowers, of which the following is a specification.

This invention relates to mowers.

The object of the invention is to improve the construction and arrangement of machines of this class and to render the same more efficient in operation.

The invention consists, substantially, in the combination, construction, location, and relative arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings and finally specifically pointed out in the appended claims.

Referring to the accompanying drawings and to the various views and reference-signs appearing thereon, Figure 1 is a view in plan, parts being broken off, of a mowing-machine embodying the principles of my invention. Fig. 2 is a view in side elevation of the same, parts being broken away and parts in section. Fig. 3 is a transverse sectional view of the same on the line 3 3, Fig. 1, looking in the direction of the arrows. Fig. 4 is a broken detail view, in side elevation, showing the cam-sleeve and its operating-handle and connections for shifting the main frame. Fig. 5 is a central longitudinal sectional view of the construction shown in Fig. 4. Fig. 6 is a transverse sectional view of the same on the line 6 6, Fig. 5.

The same part is designated by the same reference-sign wherever it occurs throughout the several views.

In the drawings, reference-sign A designates the traction-wheels of the mower; B, the axle supporting the same; C, the ratchet-gearing for coupling the traction-wheels to the axles, whereby said wheels are coupled to rotate in unison with each other and with the axle B in one direction, but are capable of independent rotation in the other direction; D, the main frame, suitably sleeved to rock upon the axle B and supporting the finger-bar E and its operating mechanism; F, the gyrating gear from which the cutter is actuated; G, the shoe; H, the lever by which the extreme outer end of the finger-bar is raised and lowered; J, the lever for changing the inclination of the finger-bar in the direction of travel of the machine; K, the tongue of the mower, and L the plate for supporting the tongue.

The parts so far referred to may be of any usual, ordinary, or well-known construction, and the specific construction and arrangement thereof, being well known in the art, require no special description herein.

In the usual construction of mowers of the type to which the present invention relates the main frame D, upon which is supported the finger-bar and its operating mechanism, is sleeved to rock upon the driving-axle B, as above indicated and as shown in the drawings. The gyrating gear F for actuating the cutter is mounted on the main frame, and said main frame is mounted to slide longitudinally upon the axle B in order that said gear may be moved into and out of engagement with a driving-gear mounted on the axle B in the usual manner. This movement of the main frame D to effect the engagement or disengagement of said gears is effected in the following manner, particular reference being had to Figs. 4, 5, and 6: The part M of the ratchet-gear C is rigidly mounted on the axle B to rotate therewith, as by means of the pin N, said part M comprising a sleeve, as shown, in which is provided a peripheral groove O. A shifting lever or handle P, provided with a hub, is sleeved upon the sleeve of part M, and said hub is provided with a peripheral groove Q, arranged to receive the flange R, formed by the groove O in said sleeve M, and said hub is also provided with a flange S, adapted to be received in the groove O of sleeve M. By this construction it will be seen that when lever P and its hub are rocked said parts are held against movement longitudinally of the shaft or axle B. In the outer periphery of the sleeve or hub of lever P is formed a cam-slot T, adapted to receive the end of an arm U, securely bolted to or mounted in the main frame D.

From the foregoing description it will be seen that when the lever P is rocked, the said lever and its hub being held against movement longitudinal of the axle, the main frame D is caused to be shifted longitudinally of said axle by reason of the engagement of arm U in the cam-slot T of the hub of said lever. On

account of the friction of the parts due to or caused by the tendency of the gears to force apart during the operation of the machine, which tendency is resisted by the engagement of the faces of said flanges R and S, it is exceedingly desirable to provide means for constantly lubricating the bearing parts, to the end that the greatest ease in efficiency and operation may be secured. In order to accomplish this result in an efficient manner, I continue the flange S of the lever-hub about two-thirds, more or less, of the entire internal periphery of said hub and arrange the same to be always underneath the axle B throughout the entire extent of the throw of the lever P, thereby forming substantially a cup or receptacle to receive the oil or other lubricant. The said flange is cut away, as clearly shown, in order to enable said flange S and also the flange R on the sleeve M to be introduced into their respective grooves Q and O in said hub and sleeve. Heretofore this cut-away portion of the hub of lever P has been arranged underneath the axle, and hence when a lubricant for the bearing faces or portions was poured into the coupling such lubricant ran out through such cut-away portion and without effecting the desired lubrication, the friction between the bearing-faces of the flange preventing the lubricant from entering the joint to be lubricated.

In my improved construction and arrangement, as above described, wherein the cut-away portion of the flange is always above the axle B and a cup or receptacle is formed in which the lubricant is retained, the parts operate constantly in the lubricant, and hence the bearing-faces are at all times efficiently lubricated. In order to prevent the entrance of dust, dirt, or other foreign substance to the bearing, I provide a removable dust-shield W, adapted to cover the opening formed by the cut-away portion of the flange of the lever-hub, and which may be removably secured in place in any desired manner. The lubricant may be introduced to the joint when the parts are assembled in any suitable or desirable manner, as, for instance, through an opening 7 in the dust-shield, which may be protected in any suitable manner, as by a pivoted cap 8, as shown.

In prior constructions of mowers of the type to which the present invention relates it was usual to pivotally support the finger-bar at the inner end thereof. The lever H, through which the outer or free end of the finger-bar is raised and lowered, is connected to the finger-bar at a point outwardly from the point of pivotal support thereof through a triangular lever 9 and a link 10. A rack 11, arranged to be engaged by a pawl carried by said lever, serves to maintain the lever, and hence the outer end of the finger-bar, in the desired position to which it may be adjusted. Heretofore it has been customary to connect one end of a rod to the triangular lever 9 and arranged to pass through a sleeve or other suitable perforation upon a fixed part of the main frame, and a spring was coiled upon said rod and interposed between said sleeve and a nut carried upon the rod, the tendency of the spring being to assist the lever H in elevating or maintaining the outer end of the finger-bar in elevated position and permit a slight yielding movement of the finger-bar about the axis of its pivot, as occasion might require. Moreover, since the said rod was arranged in the general direction of inclination of the main frame, the said spring also tended to lift the inner end of the finger-bar. I have found in practice that such an arrangement of counterbalancing-spring is objectionable, and the use thereof detracts from the efficiency of the construction by reason of the friction of the loose rod sliding back and forth through the sleeve, and, moreover, the use of the compression coil-spring necessitated by such an arrangement tends to increase the friction of operation of these parts, and hence it was impossible to secure the desired degree of ease and facility of operation. In order to avoid the objections noted and at the same time to cheapen and simplify the construction and arrangement and to render the same more perfect and efficient in action, I omit the rod and coiled compression-spring and employ in lieu thereof a tension-spring 12, which I connect at one end thereof directly to the triangular lever 9 and at the other end thereof to an adjustable bolt 13, suitably mounted for longitudinal adjustment in a rearwardly-extending arm 14 of the tongue-plate. From this construction I obtain all the advantages of a counterbalancing-spring without the necessity of a rod or a coiled compression-spring, and hence without the attending disadvantages, as above noted.

In the operation of a mowing-machine of the type to which the present invention relates it is necessary to provide means whereby the main frame D may be rocked about the axle B in order to raise the lower end of the main frame and the inner end of the cutter-bar bodily to accommodate for the inequalities of the ground, in turning corners, and for various practical reasons. In order to accomplish this result in a simple and efficient manner and with the least amount of power, I provide the following construction and arrangement, particular reference being had to Fig. 3: The tongue-plate L, upon which is mounted the tongue K and which also carries the driver's seat 15, is pivotally mounted, as at 16, upon the main frame D, and on an axis which lies in a vertical plane to the rear of the vertical plane containing the axis of the shaft or axle B, and hence also to the rear of the axis about which the main frame D rocks. Projecting still farther toward the rear from the main frame D is an arm 17. A similarly rearwardly-projecting arm 18 of the tongue-plate

L forms a bearing for the foot-lever 19, arranged in a convenient position to be rocked by the driver. A link 20 connects said lever with said rearwardly-projecting arm 17 of the main frame. From this construction and arrangement it will be seen that when the lever 19 is suitably actuated in the proper direction the pressure exerted thereon is transmitted through the connecting-link 20 to a rearward extension 17 of the main frame, thereby most effectively applying the power required to elevate the front end of the main frame, and hence also the finger-bar. A suitable catch or latch 21, arranged in the path of movement of the lever 19, serves to engage said lever and maintain the same in position as may be desired. Thus it will be seen that not only is the tongue-plate support rearwardly of the axis about which the main frame pivots, but also the operating-lever 19 is mounted rearwardly of such axis, and said lever is connected to said main frame at a point rearwardly of said axis, and hence providing a most effective arrangement for the purposes required.

It sometimes happens that from the uneven condition of the ground or from other causes the main frame and the finger-bar when elevated by the actuation of lever 19, as above explained, will not readily swing downwardly again when said lever is released. In order to obviate this difficulty, I provide the lever 19 with a rearward extension 25 beyond its pivot, as shown, whereby when suitably actuated by the driver the main frame may be positively rocked in a direction to lower the front end thereof.

It will be understood that many variations in the specific details of construction and arrangement would readily suggest themselves to persons skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited or restricted to the exact details of construction and arrangement shown and described; but,

Having now set forth the object and nature of my invention and a form of apparatus embodying the same and having explained the construction, function, and mode of operation thereof, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. In a mower, a supporting-axle, a main frame mounted thereon, gearing, means for shifting said main frame to engage and disengage said gearing, and means adapted to receive and contain a lubricant in which the bearing-surfaces of said shifting means are arranged to operate whereby such bearing-surfaces are constantly lubricated, as and for the purpose set forth.

2. In a mower, a main frame, a cutter, gearing for actuating said cutter, and means for shifting said frame to engage and disengage said gearing, comprising a sleeve, said sleeve provided with a flange arranged to engage a groove on a fixed part, whereby said sleeve is held against other than rotary movement, the flange on said sleeve arranged to form a receptacle adapted to receive and hold a lubricant, whereby the bearing-faces of said flanges are constantly lubricated during the operation of the machine; as and for the purpose set forth.

3. In a mower, traction-wheels, a supporting-axle therefor, a finger-bar, a main frame supporting the same, said main frame mounted on said axle, gearing for actuating the cutter, means for shifting said main frame upon said axle to engage or disengage said gearing, comprising a cam-sleeve, an arm carried by said main frame and adapted to engage said cam-sleeve, said cam-sleeve provided with a flange arranged to surround the under part of said axle, thereby forming a cup or receptacle adapted to receive and contain a lubricant, means for rocking said sleeve, and means for preventing movement of said sleeve longitudinally of said shaft; as and for the purpose set forth.

4. In a mower, traction-wheels, a supporting-axle, a finger-bar, a main frame mounted in said axle for supporting said finger-bar, gearing for actuating the cutter, a sleeve for coupling the traction-wheel to said axle, said sleeve mounted rigidly on said axle and provided with a peripheral groove and flange, a cam-hub mounted on said sleeve and provided with a groove and flange to receive the groove and flange respectively of said sleeve, whereby said cam-hub is held against longitudinal movement on said axle, but is permitted a rotary movement, said cam-hub flange arranged to encircle and inclose the under side portion of said axle, thereby forming a receptacle adapted to receive and hold a lubricant, and connections between said main frame and cam for shifting said main frame to engage and disengage said gearing; as and for the purpose set forth.

5. In a mower, traction-wheels, an axle, a main frame supported on said axle and carrying a finger-bar and actuating-gearing for the cutter, a ratchet-sleeve rigidly mounted on said axle and constituting means for coupling said traction-wheel and axle, said sleeve provided with a peripheral groove and flange, a cam-hub provided with a coöperating groove and flange, arranged to encircle and inclose the under portion of said axle, thereby forming a receptacle adapted to receive and contain a lubricant, said cam-hub groove and flange being cut away above the axle, a removable dust-guard arranged to cover said cut-away portion, means for introducing a lubricant to said receptacle, and connections between said main frame and cam-hub, whereby when said hub is rocked said frame is shifted longitudinally with respect to said axle; as and for the purpose set forth.

6. In a mower, a supporting-axle, main frame mounted thereon, gearing means for

shifting said main frame to engage and disengage said gearing, a receptacle adapted to contain a lubricant, in which receptacle the bearing-surfaces of said shifting means are arranged to operate whereby said bearing-surfaces are constantly lubricated, as and for the purpose set forth.

In witness whereof I have hereunto set my hand this 8th day of September, 1896.

MAURICE KANE.

Attest:
S. E. DARBY,
M. I. CAVANAGH.