

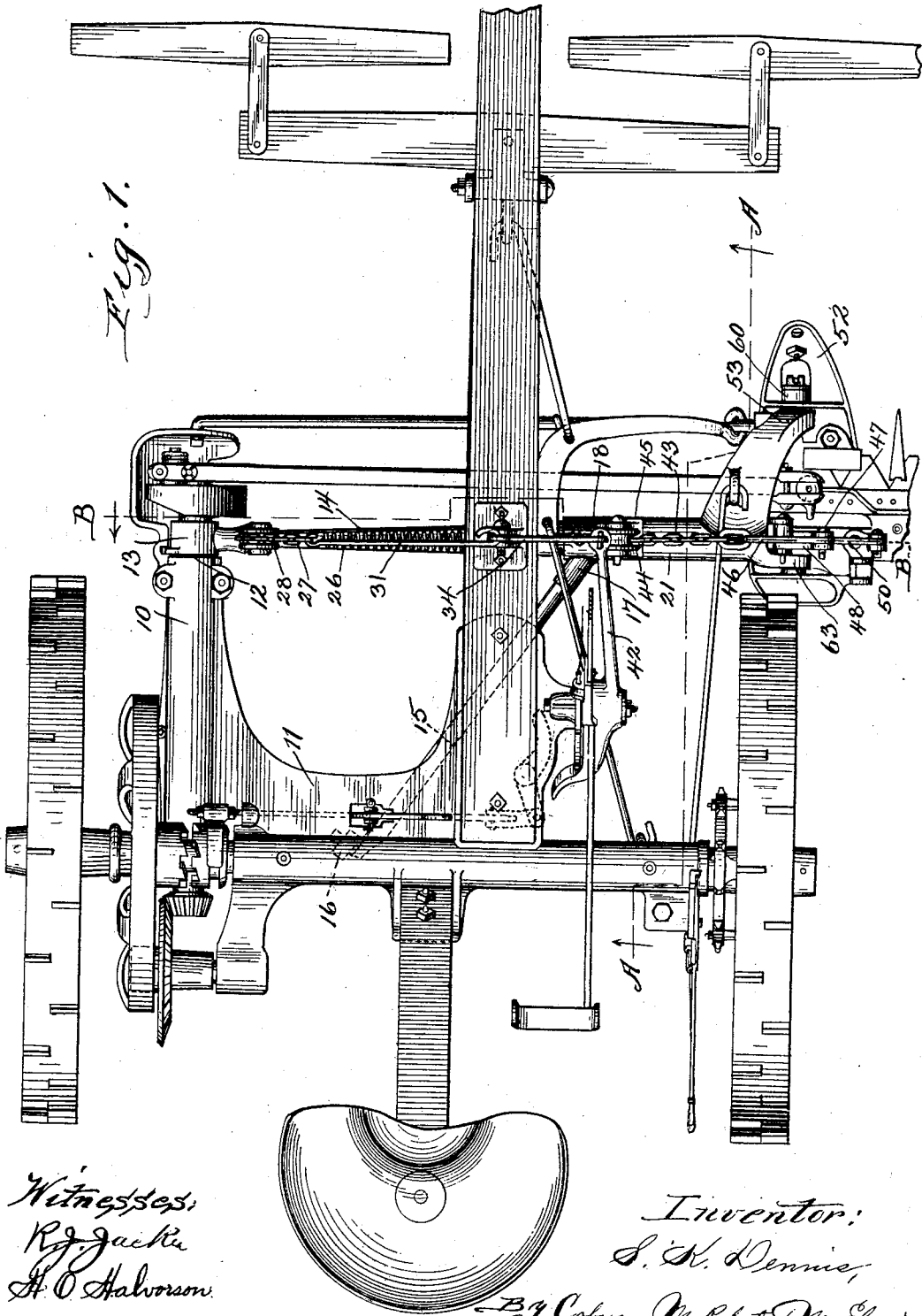
No. 784,663.

PATENTED MAR. 14, 1905.

S. K. DENNIS.
MOWER.

APPLICATION FILED JAN. 24, 1902.

3 SHEETS—SHEET 1.



Witnesses:
R. J. Jaeger
H. O. Halverson.

Inventor:
S. K. Dennis,

By Coburn, Roberts & McClay,
his Attys.

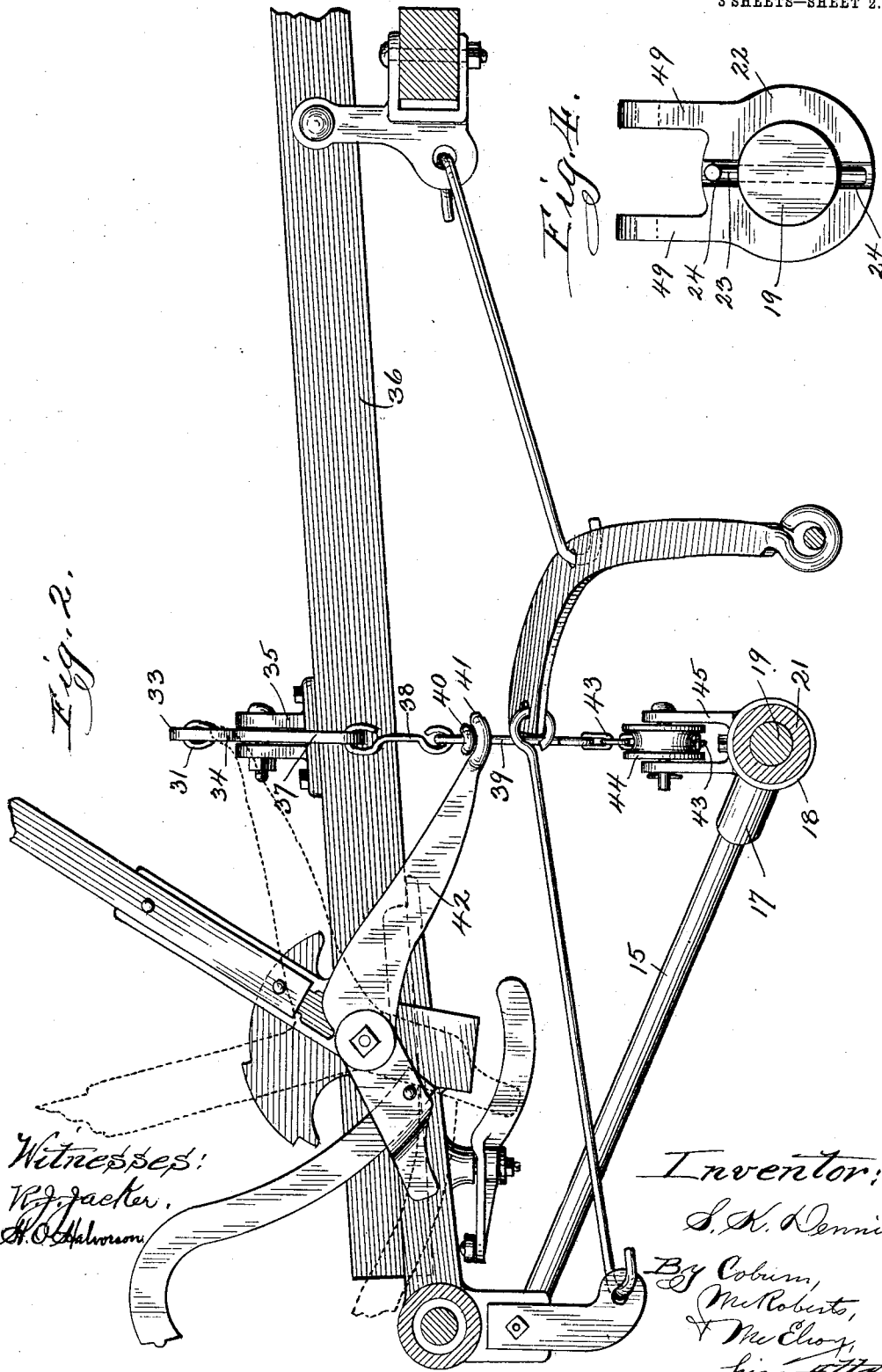
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3 SHEETS—SHEET 2.



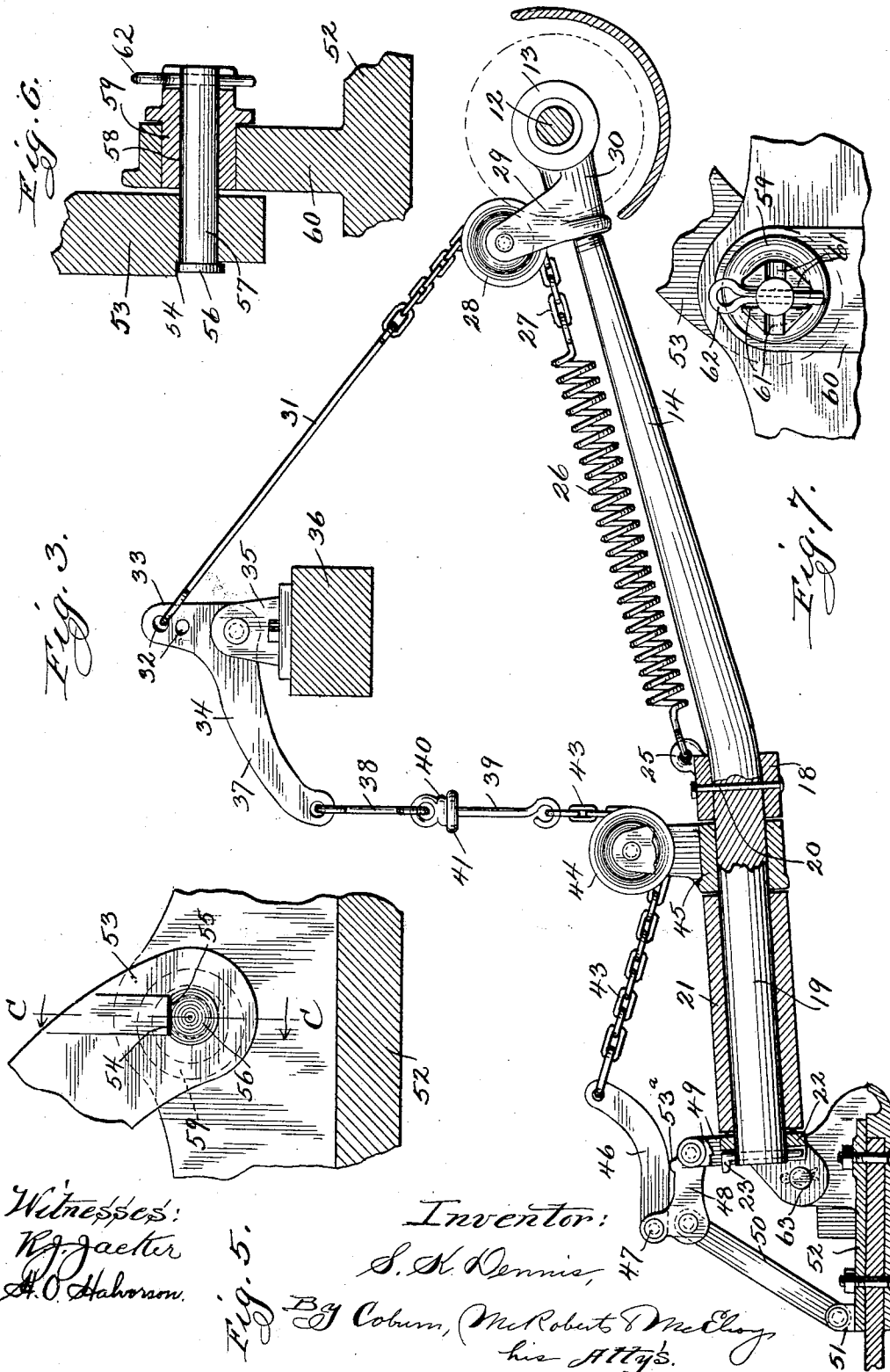
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APPLICATION FILED JAN. 24, 1902.

3 SHEETS—SHEET 3.



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Fig. 5.

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UNITED STATES PATENT OFFICE.

SAMUEL K. DENNIS, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INTERNATIONAL HARVESTER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

MOWER.

SPECIFICATION forming part of Letters Patent No. 784,663, dated March 14, 1905.

Application filed January 24, 1902. Serial No. 91,094.

To all whom it may concern:

Be it known that I, SAMUEL K. DENNIS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mowers, of which the following is a specification.

My invention is concerned with certain new and useful improvements in the location for the compensating spring and the connections between said spring and the cutting mechanism with which it is adapted to cooperate.

My invention is further concerned with certain new and useful improvements in the connections between the lifting-crank and the finger-bar, said connections being specially adapted for use in the so-called "vertical-lift" mowing-machines.

My invention is finally concerned with certain improvements in the bearings between the yoke on the coupling-frame and the shoe on the finger-bar by which they can be adjusted to take up any wear that may occur, and thereby keep the finger-bar in alinement with the pitman-rod.

To illustrate my invention, I annex hereto three sheets of drawings, in which the same reference characters are used to designate identical parts in all the figures, of which—

Figure 1 is a plan view of a mowing-machine having my improvements employed thereon. Fig. 2 is a detail view in side elevation and partly in section on the line A A of Fig. 1, designed more especially to show the connections between the lifting-crank and the finger-bar. Fig. 3 is a detail in front elevation, showing the yoke on the coupling-frame and the finger-bar shoe in central longitudinal section on the line B B of Fig. 1. Fig. 4 is an end elevation of the combined collar and fulcrum on the outer end of the main bar of the coupling-frame. Fig. 5 is a detail showing the front bearing between the coupling-frame yoke and the finger-bar shoe in rear elevation. Fig. 6 is a vertical section through the same bearing on the line C C of Fig. 5, and Fig. 7 is a front elevation of the same bearing.

Pivoted to the tubular extension 10 of the main frame 11, which serves as a bearing for the pitman-shaft 12, is a collar 13, into which is screwed or otherwise secured the end of the main bar 14 of the coupling-frame. The thrust-bar 15 of the coupling-frame is, as best shown in Fig. 1, pivoted to the lug 16, projecting downward from the under side of the main frame, and has its other end screwed or otherwise secured in the socket 17, projecting rearwardly and diagonally from the collar 18, which is secured at the inner end of the bearing portion 19 of the main bar 14 by any convenient means, such as the bolt 20 passing through the collar and the main bar. The bearing-sleeve 21 of the coupling-frame yoke is pivoted on the bearing portion 19 of the main bar and is held in position by the collar 18 at its inner end and the collar 22, which is secured to the outer end of the main bar conveniently by the pin 23 passing through an aperture in the end of the main bar and having its end held in the recesses 24 in the face of the collar 22.

Secured to and preferably formed integrally with the collar 18 is an eye 25, projecting inwardly therefrom and adapted to have hooked therein the outer end of the coiled compensating spring 26, the other end of which is fastened to a chain 27, which passes over a sheave 28, mounted in the ears 29, projecting upward from the extension 30 of the collar 13, into which the inner end of the main bar 14 is screwed. With this construction it will be seen that the compensating spring extends along the main bar substantially parallel with the upper surface thereof. The chain 27 is connected at its upper end to the link 31, which has its upper end in turn hooked into one of the recesses 32, formed in the upwardly-projecting arm 33 of the lever 34, pivoted in the bearing 35, secured upon the tongue 36 just above the main bar 14. The plurality of apertures 32 are employed, so that an adjustment may be made for the leverage which it is desired to give the spring upon the finger-bar, which is varied with the different lengths and weights of the finger-bars. The substan-

tially horizontal arm 37 of the bell-crank lever 34 has secured to its lower end the link 38, which is connected to the link 39, the connection of one of these links conveniently forming a stop 5 40, with which the eye 41 on the end of the arm 42 of the lifting-crank coöperates. With this connection it will be apparent that the compensating spring will operate on the finger-bar to balance the same independently of the lifting-crank, but when the lifting-crank is thrown rearwardly, as shown in the dotted-line position of Fig. 2, it will coöperate with the link 39 and the connections beyond it to raise the finger-bar in the customary manner.

The chain 43 is connected to the lower end of the link 39 and passes beneath the sheave 44, which is journaled in the yoke-bearing collar 45, which is pivoted upon the bearing portion 19 between the collar 18 and the sleeve 20 21, so as to permit the sheave 44 to swing into the different planes occupied by the chain 43 as the finger-bar is raised and lowered. The outer end of the chain 43 is pivotally connected to the gag-lever 46, which in turn is pivotally connected to the bearing-lug 47 of the fulcrum-link 48, which in turn is pivotally mounted between the ears 49, conveniently formed integral with and projecting upward from the collar 22. Pivotaly connected to the outer end of the fulcrum-link 48 is the link 50, which is pivotally connected at its lower end to the lug 51, secured to the outer end of the finger-bar shoe 52. A fulcrum-lug 53^a is preferably formed on the fulcrum-link 48 in a position so that the gag-lever 46 rests on said fulcrum-lug 53^a when the finger-bar is down. As the tension is applied to the chain 43 either by the compensating spring 26 or the lifting-crank it will be apparent that the pull of the chain on the gag-lever 46 will first cause said lever to act as a lever of the first class to lift the finger-bar until it is raised some distance and the lever 46 is raised from the fulcrum-lug 53^a, after which said gag-lever operates merely as a link in the chain of connections between the chain 43 and the finger-bar.

In Figs. 5, 6, and 7 I have illustrated the details of the construction embodying that portion of my invention by which the adjustment of the front bearing between the coupling-frame yoke and the finger-bar shoe may be changed to take up any wear that may occur, as is customary with this class of devices. The front downwardly-projecting ear 53 of the coupling-frame yoke is provided with a square abutment 54, against which rests the square or flattened portion 55 of the head 56 of the pin 57, which passes through the ear 53. Of course it will be understood that I might make the portion of the pin 57 passing through the ear 53 of some other cross-section than circular and have it coöperate with the correspondingly-shaped aperture in the ear 65 53; but for convenience of construction I pre-

fer to use the pin with the circular cross-section and prevent it from turning by using the flattened portion 55 on its head, coöperating with the shoulder 54. The inner end of the pin 57 passes through the eccentric aperture 70 58 in the bearing-sleeve 59, which is mounted in the ear 60 of the finger-bar shoe 52. The outer end of the bearing-sleeve 59 is provided with the two pairs of oppositely-disposed recesses 61, with which coöperates the cotter-pin 62, passing through the end of the pin 57 to hold the bearing-sleeve 59 in any position of adjustment in which it may be placed on the pin. From a consideration of Fig. 7 it will be seen that the bearing-sleeve 59 may 80 be adjusted in any one of the three positions which will vary the relative position of this bearing with regard to the rear bearing 63, so that any desired one of the three angles of adjustment between the coupling-frame yoke 85 and the finger-bar shoe that may be necessary to take up the wear may be made. By thus moving the pivotal center of the rear bearing toward or from the machine it will be apparent that the outer end of the finger-bar, will 90 be thrown correspondingly backward or forward, thus changing the angle of the finger-bar with reference to the line of the main bar of the coupling-frame.

While I have shown loose connections between the lifting-crank and the finger-bar so that the compensating spring may operate independently of the lifting-crank, it will be understood that my invention is not confined to such a construction, but that the compensating spring might be attached positively to the lifting-crank and still embody that portion of my invention which is concerned with the connections between the lifting-crank and the finger-bar. 105

While I have shown my invention as embodied in the forms which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications and that I do not desire to be limited in the interpretation of the following claims, except as may be necessitated by the state of the prior art. 110

What I claim as new, and desire to secure by Letters Patent of the United States, is— 115

1. In a mowing-machine, the combination with the main frame, of a coupling-frame connected thereto, a coiled spring connected at one end to said coupling-frame and extending longitudinally of the main bar thereof, a flexible connection secured to the other end of said spring, a bearing about which said connection passes, the finger-bar pivoted to said coupling-frame, and connections between said finger-bar and flexible connection whereby the tension of the spring tends to lift the finger-bar. 120

2. In a mowing-machine, the combination with the main frame, of a coupling-frame connected thereto, a coiled spring connected at one end to said coupling-frame and extending 130

longitudinally of the main bar thereof, a flexible connection secured to the other end of said spring, a sheave on the inner end of said coupling-frame about which the flexible connection passes, a bell-crank lever pivoted to the main frame and connected to said flexible connection, the finger-bar pivoted to said coupling-frame and connections between the finger-bar and the bell-crank lever whereby the tension of the spring tends to lift the finger-bar.

3. In a mowing-machine, the combination with the main frame, of a coupling-frame hinged thereto, a coiled spring connected at one end to said coupling-frame and extending longitudinally of the main bar thereof, a flexible connection secured to the other end of said spring, a bearing about which said connection passes, the finger-bar pivoted to said coupling-frame, connections between said finger-bar and flexible connections whereby the tension of the spring tends to lift the finger-bar, and a lifting-crank cooperating with the connections secured to the finger-bar for the purpose described.

4. In a mowing-machine, the combination with the main frame, of a coupling-frame connected thereto, a coiled spring connected at one end to said coupling-frame and extending longitudinally of the main bar thereof, a flexible connection secured to the other end of said spring, a sheave mounted on the inner end of the coupling-frame about which said flexible connection passes, a bell-crank lever on the main frame to which said flexible connection extends, a second sheave near the outer end of said coupling-frame, a flexible connection with the bell-crank lever passing beneath said sheave, the finger-bar pivoted to said frame, and connections between said finger-bar and said second flexible connection whereby the tension of the spring tends to lift the finger-bar.

5. In a mowing-machine, the combination with the main frame, of a coupling-frame hinged thereto, a coiled spring connected at one end to said coupling-frame and extending longitudinally of the main bar thereof, a chain secured to the other end of said spring, a sheave secured near the inner end of the said coupling-frame about which said chain passes, a bell-crank lever pivoted on the main frame to which said chain is connected, a second sheave secured on said coupling-frame toward the outer end thereof, a second chain passing beneath said second sheave, links connecting said second chain with the bell-crank lever, the finger-bar pivoted to the coupling-frame, connections between said finger-bar and the second chain whereby the tension of the spring tends to raise the finger-bar, a lifting-crank pivoted on the main frame having the eye 41 through which the links connecting the second chain and the bell-crank lever pass, and a lug on said links with which said eye cooperates.

6. In a mowing-machine, the combination

with the main frame, of a coupling-frame secured thereto, the collar 18 secured to the main bar of the coupling-frame and having the eye 25 thereon, the coiled spring 26 secured to said eye 25 at one end, the chain 27 secured to the other end of said spring, the sheave 28 journaled in the bearings 29 secured at the inner end of the main bar, the bell-crank 34, the link 31 connecting the chain 27 and the bell-crank 34, the sheave 44 journaled in the bearing 45 pivoted adjacent the collar 18, the chain 43 passing beneath said sheave, the links connecting said chain 43 and the bell-crank 34, the finger-bar pivoted to the coupling-frame, and connections between the chain 43 and the finger-bar whereby the tension of the spring 26 tends to raise the finger-bar.

7. In a mowing-machine, the combination with the main frame, of the coupling-frame connected thereto, the finger-bar pivoted to said coupling-frame, a lever pivoted on the main frame, and connections between said lever and the finger-bar including the swinging link pivotally mounted on the end of said coupling-frame, and the combined link and lever member, 46, pivoted thereon and cooperating therewith.

8. In a mowing-machine, the combination with the main frame, of the coupling-frame connected thereto, the finger-bar pivoted to said coupling-frame, a lever pivoted on the main frame, and connections between said lever and finger-bar including the fulcrum-link pivotally mounted on the end of said coupling-frame, and the gag-lever pivotally mounted on said fulcrum-link and cooperating therewith.

9. In a mowing-machine, the combination with the main frame, of the coupling-frame connected thereto, the main bar constituting a part thereof, the finger-bar pivoted to said coupling-frame, a lever pivoted on the main frame, and connections between said lever and the finger-bar, the collar 22 secured on the outer end of the main bar and having a yoke thereon, the fulcrum-link pivoted in said yoke, and the gag-lever pivoted to the fulcrum-link and cooperating therewith.

10. In a mowing-machine, the combination with the main frame, of the coupling-frame connected thereto, the main bar constituting a part thereof, the collars 18 and 22 secured on the drag-bar, the yoke pivotally mounted on said main bar between said collars, the finger-bar pivoted to said yoke, a lever pivoted on the main frame, and connections between said lever and finger-bar including the sheave 44 mounted adjacent the collar 18, the chain passing beneath said sheave, the gag-lever 46 connected to said chain and to the fulcrum-link 48, the fulcrum-link 48 pivoted to the collar 22, and the link 50 pivoted to the fulcrum-link 48 and the finger-bar.

11. In a mowing-machine, the combination with the main frame, of the coupling-frame

connected thereto, the finger-bar pivoted to said coupling-frame, a lever pivoted on the main frame, and connections between said lever and finger-bar including the fulcrum-link 5 having the fulcrum-lug thereon, and the gag-lever pivoted to said fulcrum-link and cooperating with said fulcrum-lug.

12. In a mowing-machine, the combination with the main frame, of the coupling-frame 10 connected thereto, the main bar constituting a part thereof, the finger-bar pivoted to said coupling-frame, a lever pivoted on the main frame, a collar secured on the outer end of the main bar, and connections between said lever and finger-bar including a member secured 15 on said collar and adapted to change a horizontal pull of said connections along the coupling-frame into a vertical lift on the finger-bar.

20 13. In a mowing-machine, the combination with the main frame, the coupling-frame pivoted thereto, the main bar constituting a part thereof, the coupling-frame yoke pivotally secured on the outer end of the main bar, the 25 collars 18 and 22 secured to said main bar and between which the yoke is mounted, the coiled spring 26 secured to said collar 18 at one end and having the chain 27 secured to the other end, the sheave 28 secured to the inner end of 30 the coupling-frame and about which the chain 27 passes, the bell-crank lever pivoted to the main frame and connected to the chain 27 by the link 31, the collar 45, the sheave 44 mounted thereon, the chain 43 passing beneath 35 the sheave 44 and connected to the bell-crank

34, the gag-lever 46 having its inner end turned upwardly and its outer end pivotally secured to the fulcrum-lever 48, the fulcrum-lever 48 having the lug 53^a thereon and pivotally 40 mounted on the collar 22, the finger-bar pivotally mounted on the coupling-frame yoke, and the link 50 connecting the finger-bar with the fulcrum-lever 48.

14. In a mowing-machine, the combination with the main frame, of the coupling-frame 45 connected thereto, having a bearing thereon, the coupling-frame yoke on said bearing, the finger-bar pivoted to said coupling-frame yoke, a lever pivoted on the main frame, and connections between said lever and the finger-bar including the swinging link pivotally 50 mounted on said coupling-frame beyond the bearing for the coupling-frame yoke.

15. In a mowing-machine, the combination with the main frame, of the coupling-frame 55 connected thereto, the collar 45 pivotally mounted thereon, the sheave 44 supported by the collar, the finger-bar pivoted to said coupling-frame, a lever pivoted on the main frame, and connections between said lever and the 60 finger-bar including the chain 43 passing beneath the sheave 44; substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL K. DENNIS.

Witnesses:

JOHN H. McELROY,
HATTIE O. HALVORSON.