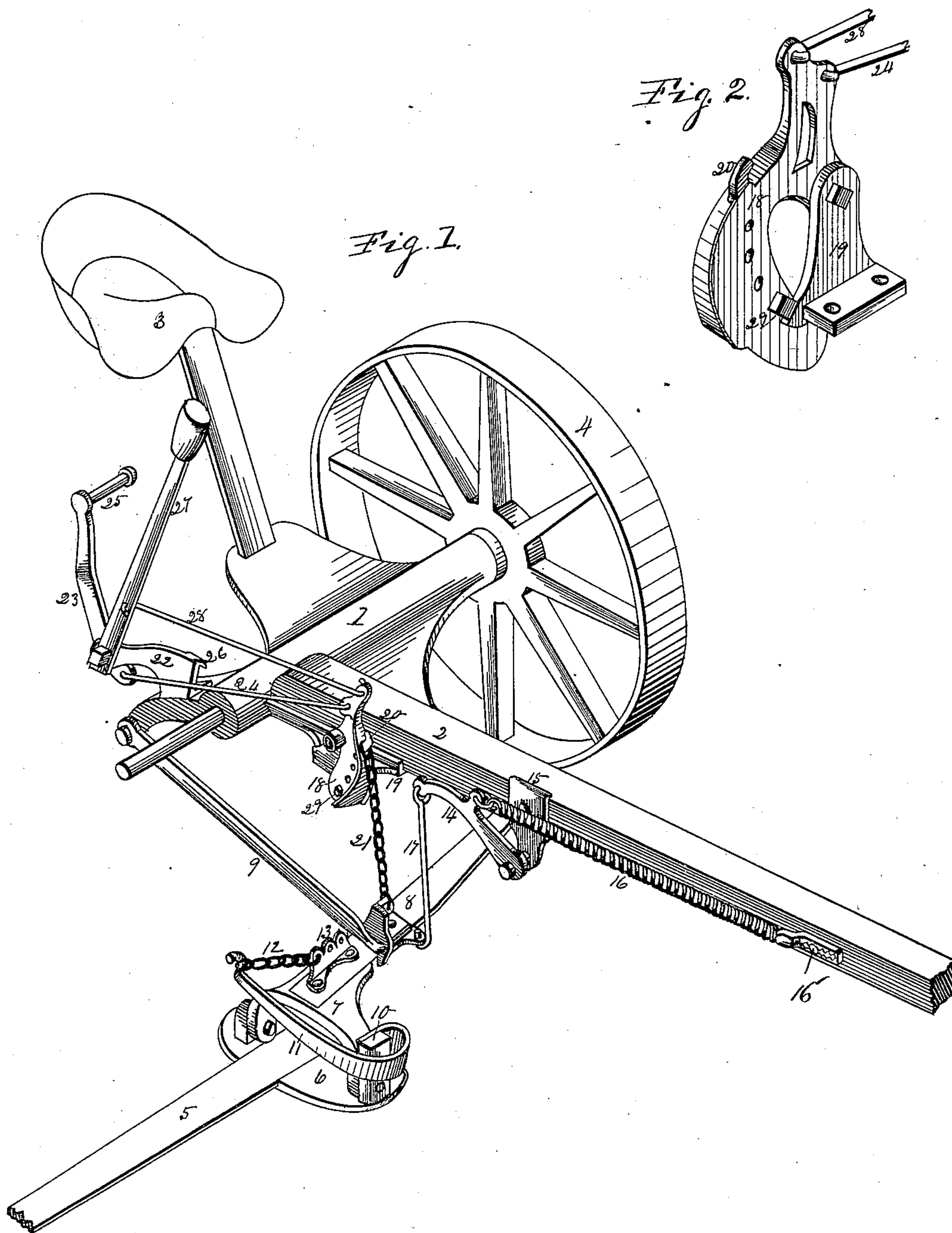


(No Model.)

J. H. JONES.
MOWER.

No. 405,238.

Patented June 11, 1889.



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MOWER.

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To all whom it may concern:

Be it known that I, JAMES HERVA JONES, a citizen of the United States, residing in the city of Rockford, county of Winnebago, and State of Illinois, have invented certain new and useful Improvements in Mowers, of which the following is a specification.

This invention relates to a class of mowing-machines known as the "two-wheeled mower."

The object of this invention is to lessen the ground friction of the cutting apparatus, lessen the direct and side drafts, increase the cutting force, lessen the force required to lift the cutting apparatus, and increase the efficiency of the machine. To accomplish these objects I have designed and constructed the machine represented in the accompanying drawings, which will be hereinafter described, and in which—

Figure 1 is an isometrical representation of portions of a mowing-machine embodying my invention, and Fig. 2 is an isometrical representation of portions of the lifting mechanism.

The several parts represented in the drawings, consisting of the supporting-frame 1, tongue 2, seat 3, and carrying-wheels 4, may be any of the known varieties of such parts selected by the manufacturer. A finger-bar 5 is fixed at its heel end to a shoe 6, hinge-jointed to the depending arms of a yoke 7, fixed to the outer end of a coupling-bar 8, which is hinge-jointed at its inner end to the supporting-frame, and a push-bar 9, connected at its rear end to the supporting-frame, and at its forward end to the coupling-bar, are substantially the same as like parts of mowing-machines now in use and to be found in the trade.

The forward ear 10 of the shoe rises above the joint-pin connecting it with the yoke, and a spring 11, to operate as a counterbalance-spring to the free end of the cutting apparatus and as a grass-guard to its jointed portion, is fixed to the rear vertical side of the ear, and from its connection therewith is bent round its forward side in a free manner and extends rearward in the lengthwise direction of the shoe over its outer edge portion, inclining upward in its rearward extension. The expression "cutting apparatus" will be em-

ployed throughout the specification and claims to denote the coupling-bar, shoe, finger-bar, and the parts carried thereby when taken as a whole, and when any particular part is referred to it will be designated by a more specific term. A chain 12 is employed to connect the free end of the spring to the coupling-bar by means of a bracket 13, fixed to the coupling-bar, and a series of holes in the bracket lengthwise of the coupling-bar to receive the chain at different points thereon furnish the means for adjustment to vary the lifting force of the spring as a counterbalance to the free end of the cutting apparatus.

The portion of the weight of the free end of the cutting apparatus sustained by the spring as a counter-balance is transferred to the shoe end thereof, and operates to press the shoe to the ground with greater force, and in the absence of other means to relieve the pressure in the shoe would increase the ground friction.

To transfer a portion of the weight of the cutting apparatus as a whole to the supporting-frame and relieve its pressure on the ground, and consequently relieve its ground friction, I employ in connection with the spring 11 a device heretofore invented by me and now pending in an application before the United States Patent Office, Serial No. 148,235, filed November 18, 1884, consisting of a compensating lever 14, pivoted at its lower end to the depending end of a bracket 15, fixed to the tongue, and a close-coiled spring 16, connected at its rear end to the central portion of the compensating lever, and its forward end having a lengthwise adjustable connection 16' with the tongue to vary its lifting spring force. A link 17 is employed to connect the free end of the compensating lever and the coupling-bar, and through which the spring exerts its force as a counter-balance to the complete cutting apparatus to transfer a portion of the weight thereof as a whole to the supporting-frame.

The construction of the compensating lever and the application to the supporting-frame, its link-connection with the cutting apparatus, and its spring-connection with the supporting-frame are such as to substantially

equalize the lifting force of the spring upon the cutting apparatus throughout the range of its action, and the proportionments of its parts, in connection with the provisions for its adjustments, are such as to transfer to the supporting-frame such portion of the weight of the shoe end of the folding or finger-bar portion of the cutting apparatus not necessary to produce the required ground contact of the shoe, and in connection with the counterbalance-spring to the free end of the cutting apparatus to transfer to the supporting-frame such portion of the weight of the whole or complete cutting apparatus not necessary to produce the required ground contact of the whole or complete cutting apparatus to lessen its ground friction, increase the traction and cutting power of the machine, and lessen its direct draft and side draft.

An intermediate irregular cam-formed lever 18 is pivotally supported on a bracket 19, fixed to the supporting-frame, to oscillate in a vertical plane substantially parallel to the tongue, and a hook 20 projects from its forward curved edge and receives the links of a chain 21, which is connected at its lower end to the coupling-bar. A bracket 22 rises from the rear end of the supporting-frame, and to its rear end is pivoted a foot-lever 23, having its depending end connected to the upper end portion of the intermediate cam-formed lever by a link 24, and its upper free end is provided with a foot-pedal 25, by means of which the operator, mounted in his seat, may depress the free end of the lever with his foot to lift the cutting apparatus and cause the lever to engage a hook-catch 26, projecting from the inner face of the bracket to hold it in its depressed position and the cutting apparatus elevated. A hand-lever 27 is also supported to oscillate on the same axial center with the foot-lever, and it is also connected to the upper end portion of the intermediate lever 18 by a link 28, which engages the hand-lever on the opposite side of the fulcrum from the link-connection of the foot-lever, which will cause the free ends of the foot and hand levers to move in opposite direction in raising and lowering the cutting apparatus. In this arrangement of the lifting and holding levers it will be observed that in lifting the cutting apparatus the movement of the foot-lever will be forward and the hand-lever will move rearward, and that these movements are most natural to the position of the attendant to enable him to operate the levers and raise the cutting apparatus with the least effort. In this construction and arrangement the lifting and holding levers are capable of joint or independent action to lift the cutting apparatus, and the construction and application of the foot-lever, by reason of its link-connection with the intermediate lever, are such as to cause its free arm when depressed to engage the hook-catch 26 on its support to hold the cutting apparatus elevated, and from which it is readily detached

by an inward sidewise movement of the foot.

The intermediate lever 18 is provided with a series of holes in its forward curving portion to receive a screw-bolt 29 in position to engage the forward edge of its bracket-support to limit the forward movement of the lever, and the screw-bolt is made to be inserted into any of the series of holes in the lever to vary the throw of its forward movements.

The foregoing description, in connection with the accompanying drawings, is limited to such parts of a mowing-machine as deemed necessary to a complete understanding of my improvements, and the parts necessary to a complete machine not shown or herein described and not duplicates of or parts having a reverse construction to those shown and described may be any of the known varieties of such parts capable of use in connection with my improvements.

In this instance I have represented and described the counterbalance-spring to the free or divider end of the cutting apparatus as capable of adjustment in its connection with the coupling-bar to vary its spring action; but in the manufacture of machines the strength of the spring may be proportioned to exert the required sustaining force as a counter-balance to dispense with the adjustment.

I claim as my invention—

1. In a mowing-machine, the combination, with the coupling-bar portion of a cutting apparatus and the finger-bar portion of the cutting apparatus hinged thereto, of a counterbalance spring arm or rod and a link, the free ends of the link and spring arm or rod being connected together, and the said spring arm or rod and link being connected at their opposite ends, the former with the finger-bar portion of the cutting apparatus and the other with the coupling-bar portion of the cutting apparatus, whereby the free end of the finger-bar portion of the cutting apparatus is counterbalanced, substantially as set forth.

2. In a mowing-machine, the combination, with the coupling-bar portion of the cutting apparatus and the finger-bar portion of the cutting apparatus hinged thereto, of a curved counterbalance spring arm or rod for the free end of the finger-bar portion of the cutting apparatus, the said spring arm or rod being secured at one end to the finger-bar portion of the cutting apparatus, and a link connecting its other end to the coupling-bar portion of the cutting apparatus, substantially as set forth.

3. The combination, with the coupling-bar portion of the cutting apparatus and the finger-bar portion of the cutting apparatus hinged thereto, of a curved counterbalance spring arm or rod fixed to the finger-bar portion of the cutting apparatus, and a link connecting the free end of the spring arm or rod to the coupling-bar portion of the cutting apparatus, the said link being made adjustable in its connection

with the coupling-bar portion of the cutting apparatus, substantially as set forth.

4. The combination, with a coupling-bar portion of the cutting apparatus and a finger-bar portion of the cutting apparatus hinged to the coupling-bar portion of the cutting apparatus, of a support rising from the finger-bar portion of the cutting apparatus, a counterbalance-spring fixed to the support, and a link connecting the free end of the spring with the coupling-bar portion of the cutting apparatus, said link made adjustable in its connection with the coupling-bar portion of the cutting apparatus, substantially as set forth.

5. The combination, with the main frame, the finger-bar portion of the cutting apparatus, and the rising and falling coupling-bar portion of the cutting apparatus connecting the finger-bar portion of the cutting apparatus with the main frame, of a compensating counterbalance spring and lever connecting the coupling-bar portion only of the cutting apparatus with the main frame, substantially as set forth.

6. The combination of a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring for the free end of the finger-bar portion of the said cutting apparatus, and a compensating counterbalance lever and spring connecting the coupling-bar portion of the cutting apparatus and the main frame, substantially as set forth.

7. The combination, with a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring for the free end of the finger-bar portion of the said cutting apparatus, a lever and spring compensating counterbalance connecting the main frame and coupling-bar portion of the cutting apparatus, a hand-lever pivotally secured to the main frame, an intermediate lever pivotally secured to the main frame, a link-connection between the intermediate lever and coupling-bar portion of the cutting apparatus, and a link-connection between the intermediate lever and hand-lever, substantially as set forth.

8. The combination of a main frame, an operating hand-lever pivoted to the main frame, a rising and falling cutting apparatus connected at one end to the main frame, a bracket-support secured to the main frame intermediate of the hand-lever and cutting apparatus, an intermediate lever pivoted to the bracket-support, a stop on the intermediate lever in position to engage the bracket-support to limit the forward throw of said lever, and a link-connection between the hand-lever and intermediate lever and between the intermediate lever and cutting apparatus, substantially as set forth.

9. The combination of a main frame, an operating hand-lever pivoted to the main frame, the rising and falling cutting apparatus connected at one end to the main frame,

a bracket-support for the intermediate lever fixed to the main frame intermediate of the hand-lever and the cutting apparatus, the intermediate lever pivoted to the bracket-support, a stop carried by the intermediate lever in position to engage the bracket-support to limit the forward throw of the said lever, said stop being made adjustable in its connection with said intermediate lever to vary the amount of throw of said lever, a link-connection between the operating-lever and intermediate lever and between the intermediate lever and the cutting apparatus, substantially as set forth.

10. The combination, with the main frame and the rising and falling cutting apparatus connected at one end thereto, of a curved spring arm or rod having one of its ends secured to the finger-bar portion of the cutting apparatus and its opposite end link-connected to the coupling-bar portion of the cutting apparatus, the said spring arm or rod forming a counter-balance for the free end of the finger-bar portion of the cutting apparatus, and a counterbalance-spring connecting the main frame and the coupling-bar portion of the cutting apparatus, substantially as set forth.

11. The combination, with the main frame, a foot-lever pivoted to the main frame, and the cutting apparatus, of an intermediate lever pivotally secured to the main frame and located between the foot-lever and the cutting apparatus, a link-connection between the foot-lever and intermediate lever and between the foot-lever and the cutting apparatus, and a detent fixed to the main frame in position to receive the foot-lever and retain it when it is thrown forward, substantially as set forth.

12. The combination, with the main frame, cutting apparatus, and intermediate lever pivotally secured to the main frame, of a hand-lever and a foot-lever, each pivotally secured to the main frame, and each having an independent link-connection with said intermediate lever, and a link-connection between the intermediate lever and the cutting apparatus, substantially as set forth.

13. The combination, with the main frame and with an intermediate lever pivotally secured to the main frame, of a foot-lever and a hand-lever pivoted to the main frame to oscillate on the same axial center, and independent links to connect the foot and hand levers, respectively, with the intermediate lever on the main frame, a cutting apparatus, and a link-connection between the intermediate lever and the cutting apparatus, substantially as set forth.

14. The combination of a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring to the cutting apparatus as a whole, a foot-lever pivotally secured to the main frame, and a connection between the cutting apparatus and foot-lever, consisting of

an intermediate lever pivotally secured to the main frame, and links connecting the intermediate lever with the cutting apparatus and foot-lever, substantially as set forth.

5 15. The combination of a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring to the cutting apparatus as a whole, a foot-lever pivotally secured to the
10 main frame, a hand-lever pivotally secured to the main frame, and connections between the hand and foot levers and the cutting apparatus, consisting, essentially, of an intermediate lever pivotally secured to the main
15 frame, links connecting the intermediate lever with the hand and foot levers, and a link-connection between the intermediate lever and the cutting apparatus, substantially as set forth.

20 16. The combination of a main frame, a rising and falling cutting apparatus connected at one end to the main frame, a counterbalance-spring for the free end of the finger-bar portion of the cutting apparatus, said spring
25 connecting the finger-bar portion of the cutting apparatus with the coupling-bar portion, a counterbalance-spring for the cutting apparatus as a whole, connecting the main frame and coupling-bar portion of the cut-
30 ting apparatus, a foot-lever pivotally secured to the main frame, an intermediate lever pivotally secured to the main frame between the foot-lever and the cutting apparatus, and links connecting the intermediate lever with
35 the foot-lever and the cutting apparatus, substantially as set forth.

17. The combination of a main frame, a cutting apparatus, a counterbalance-spring for the free end of the finger-bar portion of the

cutting apparatus, a counterbalance-spring 40 for the cutting apparatus as a whole, a hand-lever pivotally secured to the main frame, an intermediate lever pivotally secured to the main frame, and links connecting the intermediate lever with the hand-lever and with 45 the cutting apparatus, substantially as set forth.

18. The combination of a main frame, a cutting apparatus, a counterbalance-spring for the free end of the finger-bar portion of the 50 cutting apparatus, a counterbalance-spring for the cutting apparatus as a whole, a hand-lever and a foot-lever, each pivotally secured to the main frame to oscillate on the same axial center, an intermediate lever pivotally 55 secured to the main frame, and independent links connecting the intermediate lever with the hand and foot levers and the cutting apparatus, substantially as set forth.

19. The combination of the main frame, a 60 rising and falling cutting apparatus connected at one end to the main frame, a hand-lever and a foot-lever, each pivotally secured to the main frame, an intermediate lever pivotally secured to the main frame, links connecting 65 the intermediate lever with the hand and foot levers on opposite sides of their pivotal connection with the main frame, whereby an opposite movement of the hand and foot levers will effect the same movement of the inter- 70 mediate lever, and a link-connection between the intermediate lever and the cutting apparatus, substantially as set forth.

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Witnesses:

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