

No. 698,167.

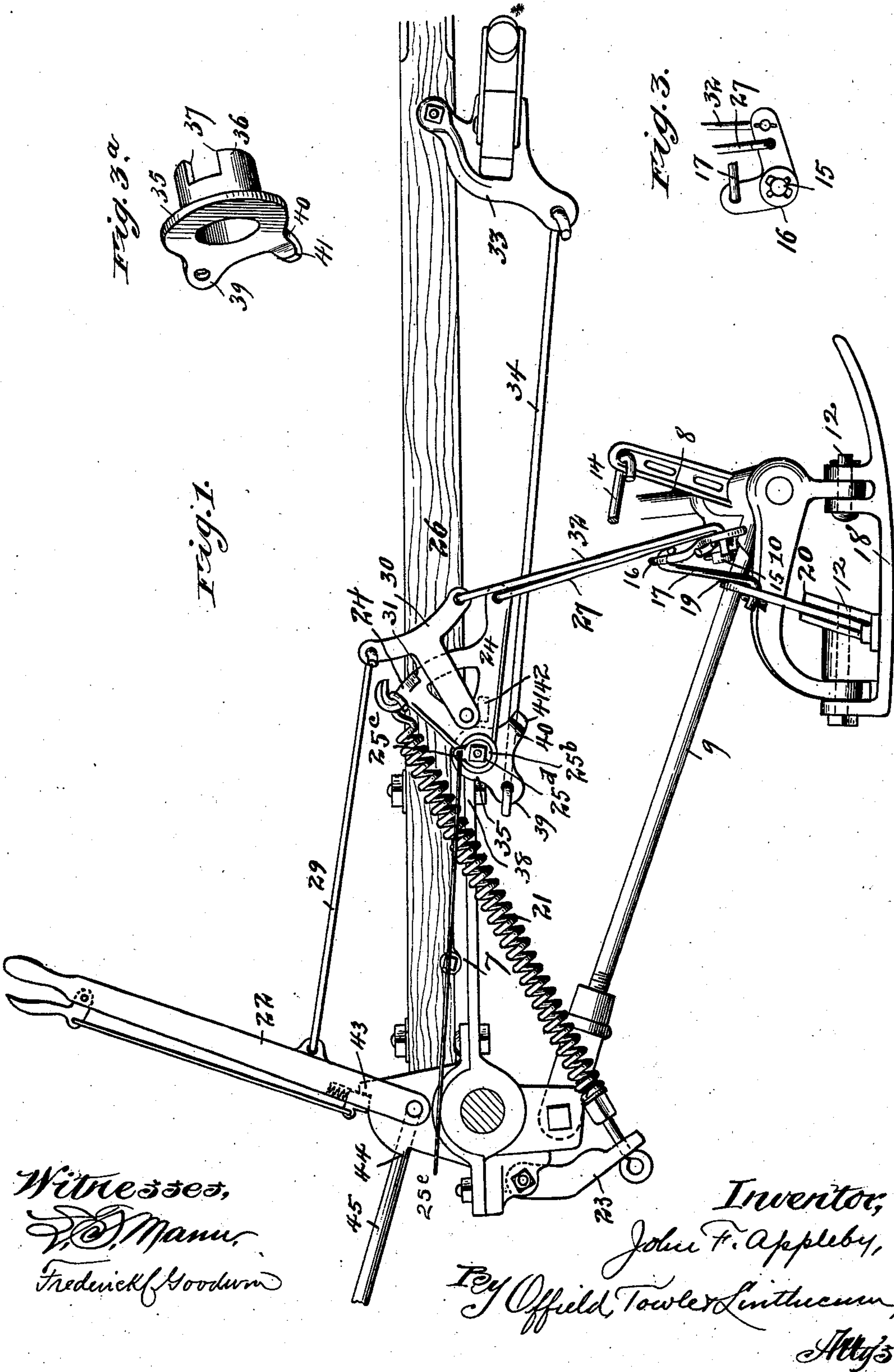
Patented Apr. 22, 1902.

J. F. APPLEBY.
MOWER.

(Application filed Dec. 11, 1899.)

(No Model.)

3 Sheets—Sheet 1.



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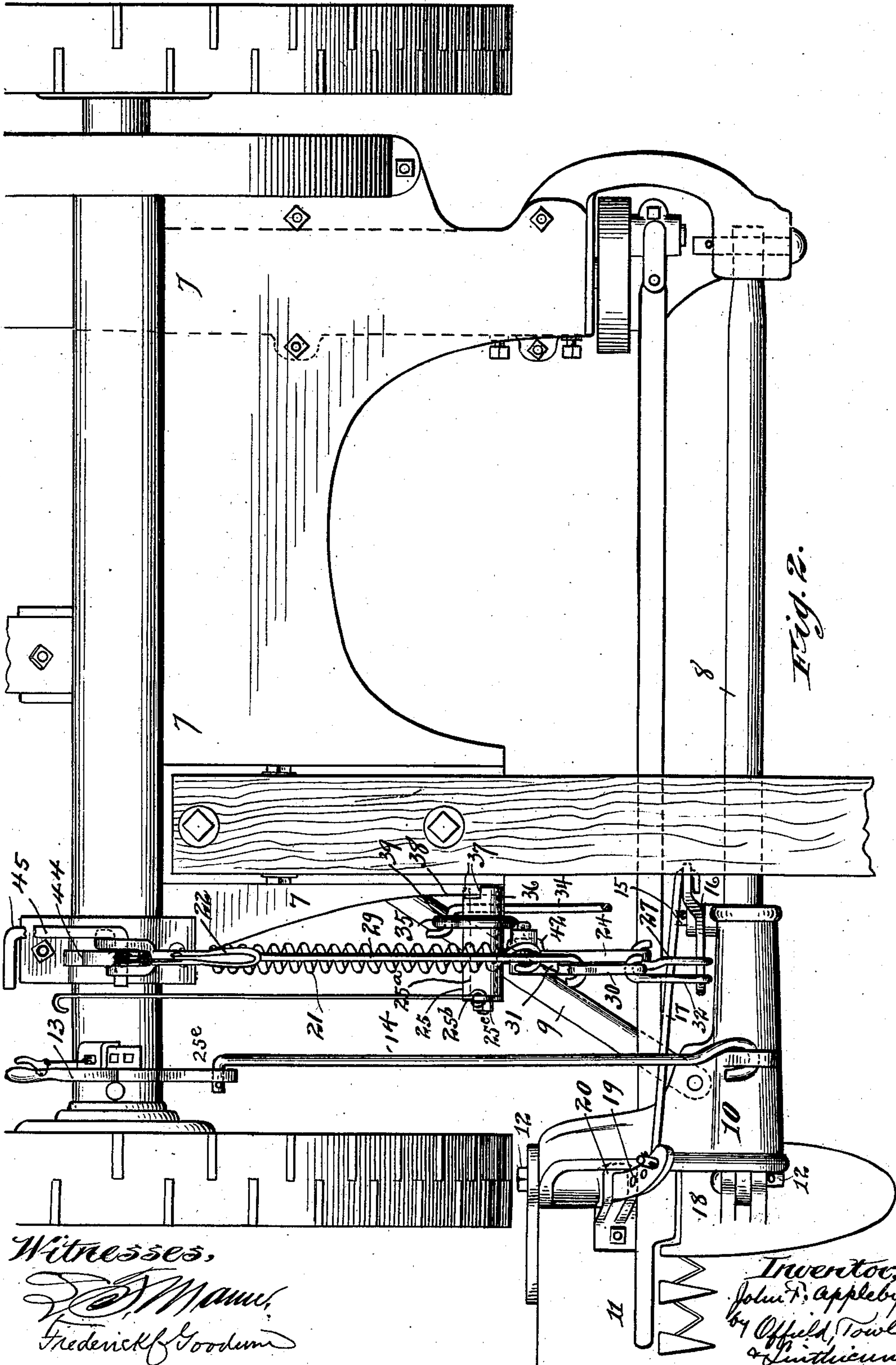
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Fig. 4.

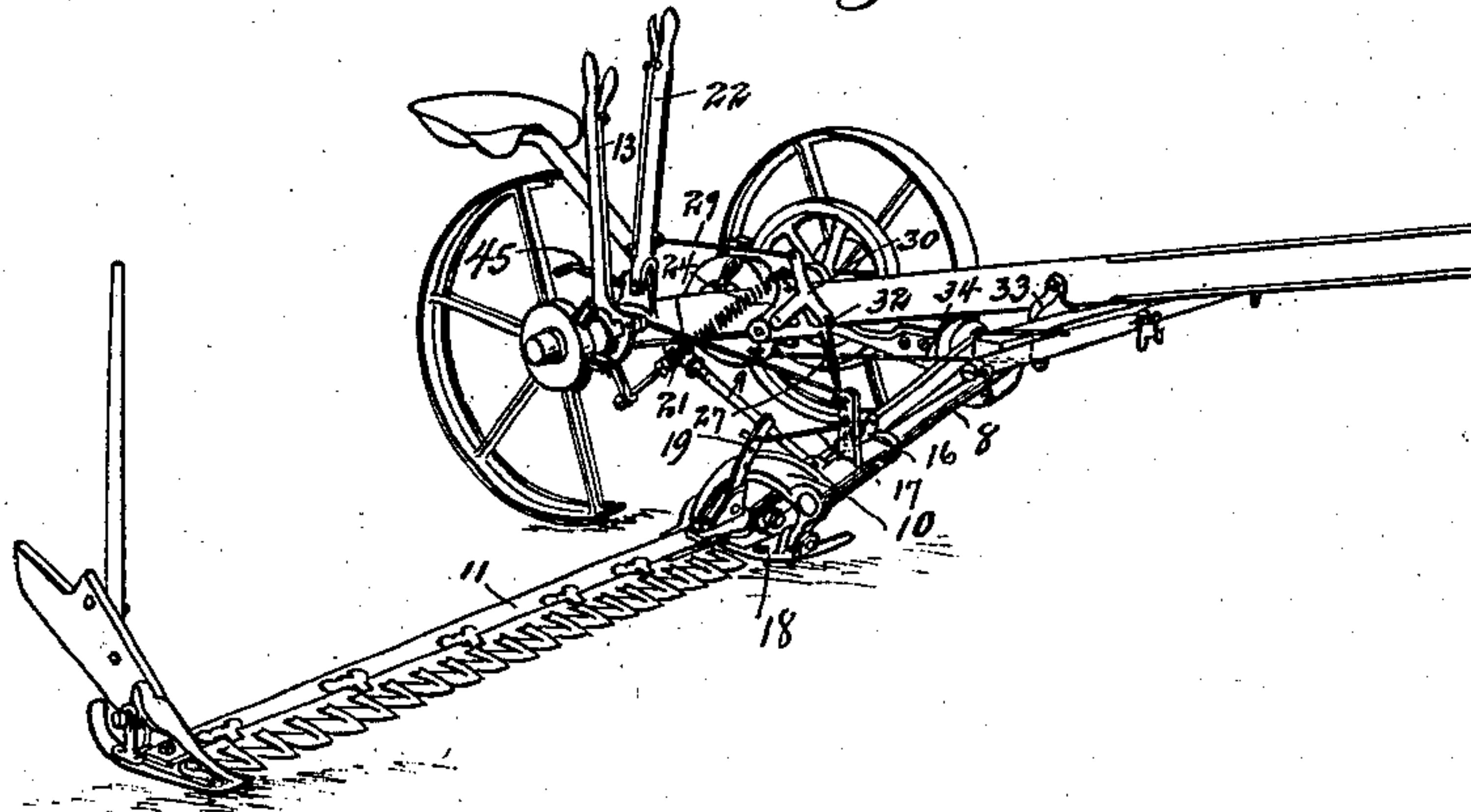


Fig. 5.

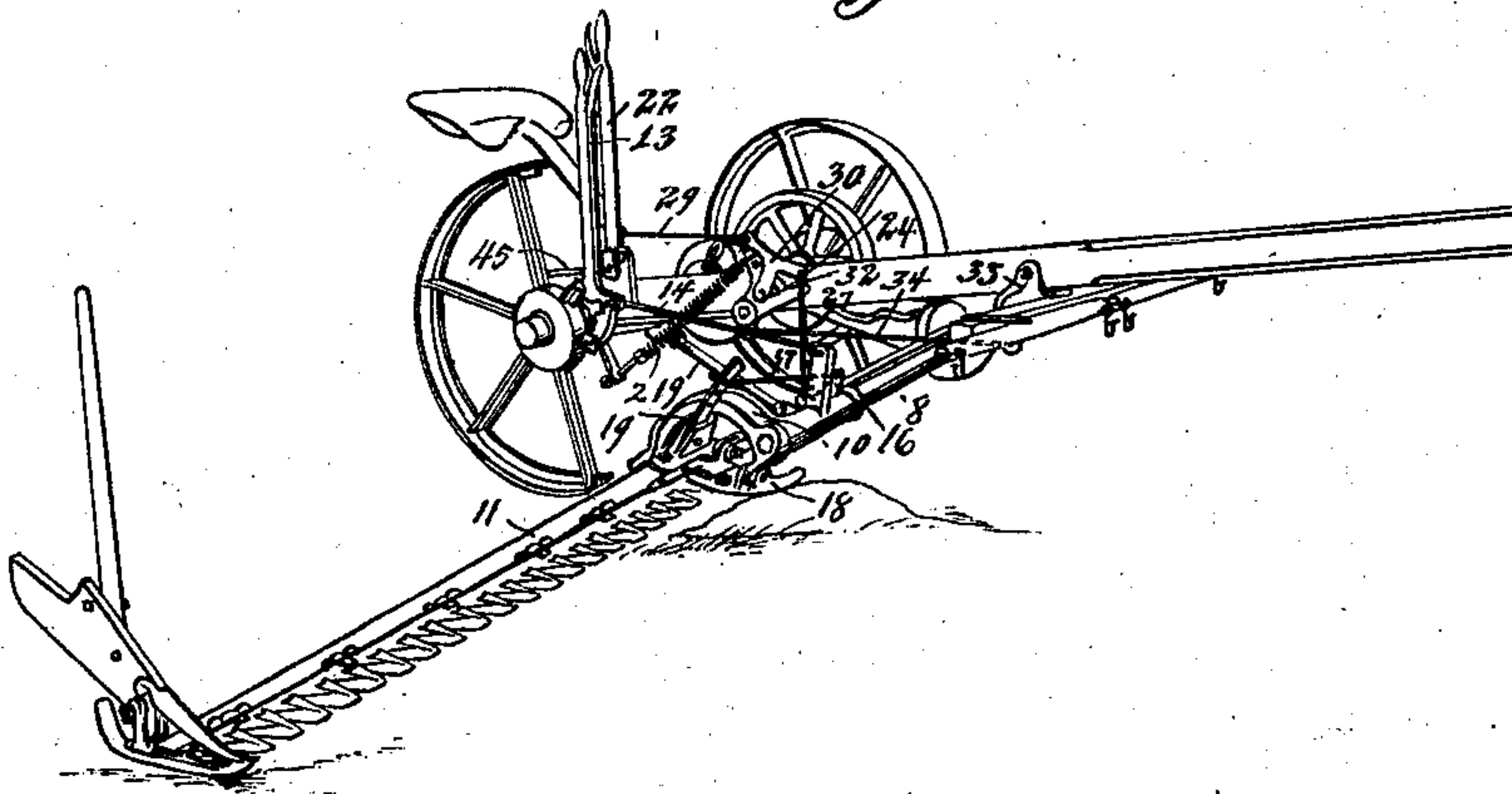
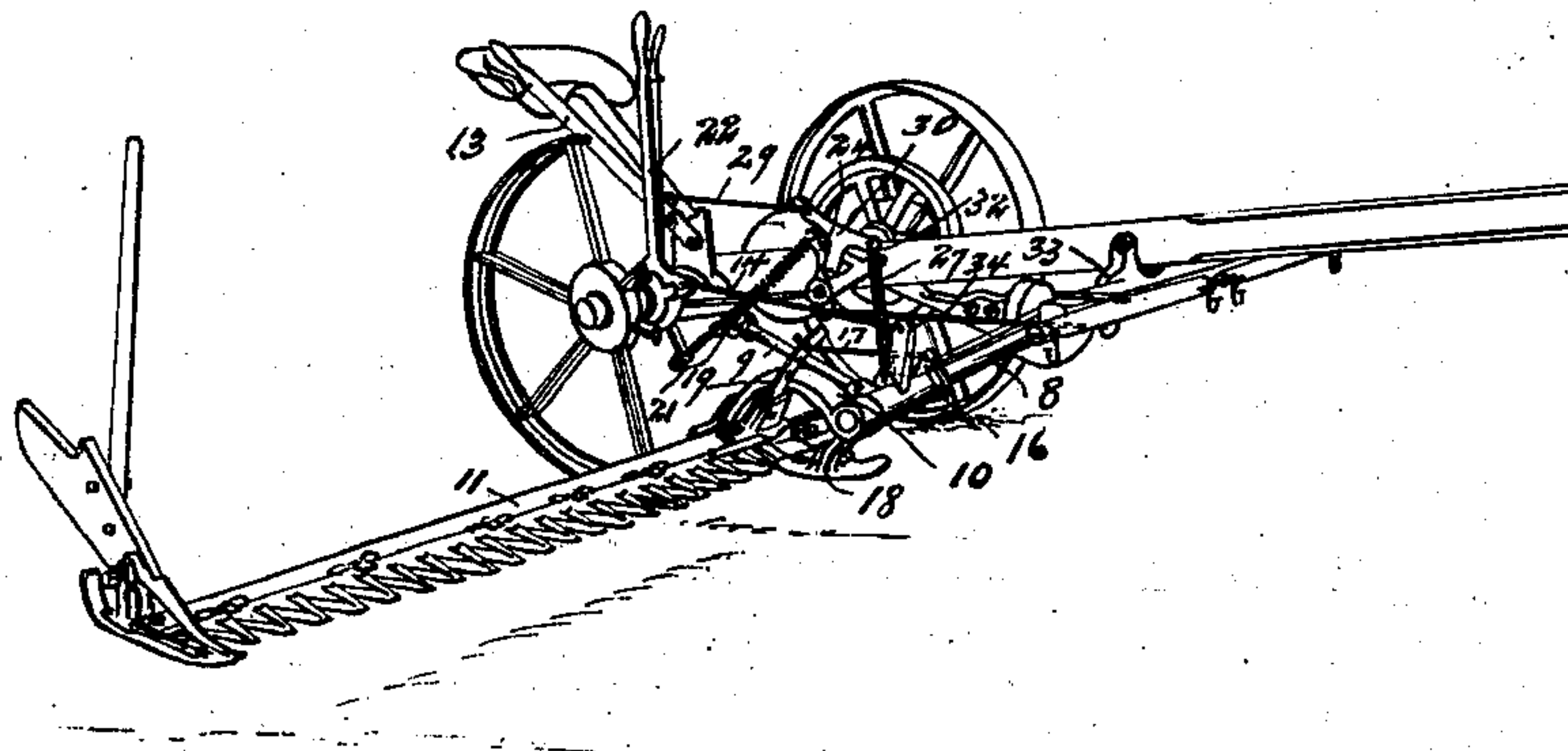


Fig. 6.



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SPECIFICATION forming part of Letters Patent No. 698,167, dated April 22, 1902.

Application filed December 11, 1899. Serial No. 739,915. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. APPLEBY, of 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.

This invention relates to a mowing-machine in which the finger-beam is connected to the main frame in such manner as will permit the beam to rise or fall at either end independently of the other to follow inequalities of the surface or passing obstructions and also in such manner as will permit the finger-beam to be raised clear of the ground at both ends in turning corners or passing any unusual obstruction.

In carrying out my invention the finger-beam is pivotally connected to the main frame, so as to be capable of being tilted or rocked forward and back, and also hinged, so that it may rise or fall at either end in use or be folded for transportation. As a coupling means I employ a coupling-bar which is arranged practically in line with the finger-beam and a thrust-bar extending rearwardly from the heel of the finger-beam and pivotally connected at its rear end to the frame. I also provide means for yieldingly supporting or cushioning the finger-beam and assisting in the manipulation thereof, said means comprising a spring and suitable connections between the main frame and the finger-beam, which spring has a constant tendency to lift upon the finger-beam at both ends, and thereby affords what is denominated a "floating" finger-beam. The spring also assists in lifting the finger-beam clear of the ground. I provide also a hand-lever and connections to the finger-beam normally inactive, but having a greater leverage than the spring connections, so that when the lever is rocked the beam is easily lifted clear of the ground, as in passing an unusual obstruction and in turning corners. I am aware that it has been common to connect the finger-beam with the main frame of the machine by a spring; but in previous constructions the range of independent movement of the ends of the beam is slight and when the inner end rises in passing an obstruction the outer end of the beam is also raised clear of the ground. In my

construction, while the spring exerts a constant tendency to lift the outer end of the beam, the parts are so proportioned that the beam will follow the surface, and its capacity of independent vertical movement is sufficient to permit it to pass all ordinary obstructions without lifting the beam at both ends. I am also aware that lifting-levers have been employed for raising the beam; but I have so connected the lever to the beam that while it is normally inactive it may be made to coact with the spring in raising the beam, and to this end the lifting-lever is so connected to the beam as to give a greater leverage on the outer end thereof. The lifting-lever and the spring preferably have a connection to the beam which is common to both; but the lifting-lever has a greater leverage, and hence exerts a greater tendency to lift the outer end of the beam, than the spring. A foot-lever is connected to the hand-lever, so that the beam may be raised by the driver without using his hands. I also connect the draft-rigging to the finger-beam connections in such a manner that the power of the draft-animals is utilized to aid in flexibly supporting and in raising the beam.

In the accompanying drawings, Figure 1 is a broken elevation, partly in section, showing the controlling mechanism for the finger-beam. Fig. 2 is a plan view showing the inner end of the finger-beam and its connecting and controlling mechanism. Fig. 3 is a detail view of the pivoted lever or arm, showing the relative connections of the finger-beam-controlling mechanism thereto. Fig. 3^a is a perspective view of a sleeve forming a part of the draft-rigging, and Figs. 4, 5, and 6 are perspective views showing the finger-beam and its controlling mechanism in different positions.

In the accompanying drawings, 7 represents the main frame, to which the finger-beam is connected by means of the coupling-bar 8 and the thrust-bar 9, pivotally connected to parts of the main frame at their inner ends and to the finger-beam bridge 10 at their outer ends. The finger-beam 11 is hinged to the bridge 10 in the usual manner, its pivotal axes being marked 12. For controlling the axial rocking movement of the finger-beam 11

the hand-lever 13 and link 14 are employed. So far the construction is common in this type of machine and requires no particular description either as to its form or operation.

5 Upon a lug 15, carried by the bridge 10, I pivot a bell-crank lever 16 and to one arm thereof connect a link 17, which is pivotally connected to the finger-beam eccentric to its hinge-axis, so that a pull upon the link 17
10 tends to lift the outer end of the finger-beam. In order to effect this connection and yet permit the finger-beam to be folded into a vertical position for moving the mower when not in use, I prefer to pivotally mount upon the
15 shoe 18 of the finger-beam an arm 19, which may be pivoted between the upstanding lugs 20, carried by the shoe, the lugs affording a stop for the arm 19 against movement in one direction and permitting it to move on its
20 pivot in the other direction. The arm may be provided with a series of apertures, so as to vary the leverage to correspond with the length of the bar or the range of movement desired therein. To the arm of the bell-crank
25 lever 16 extending toward the finger-beam I pivotally connect the spring 21 and lifting-lever 22. The spring connection 27 and the link connection 17 to the bell-crank lever 16 are at points equidistant from its pivot. The
30 spring is connected at its rear end to the main frame, preferably through pivoted lever 23, and at its forward end it is hooked to one arm of the bell-crank lever or quadrant 24, having a hub 25, sleeved over a stud or pin 25^a, carried by the frame 7. A washer 25^b, having a
35 perforated ear 25^c to receive the end of a rod 25^e to hold the beam in an upright position, is passed over the outer end of the bolt or stud 25 and is held in place by a nut 25^d. To
40 the lower arm of the quadrant 24 is hitched the link 27, which is connected to the bell-crank lever 16. The lifting-lever 22 is pivotally connected by a rod 29 to a double-armed lever 30, pivoted on the quadrant 24, and the
45 latter is provided with a stop 31, which is engaged by the body of the lever 30 at one point of its swing or movement. The quadrant 24 is connected by the rod 32 with the lever 16 near its outer end.

50 The relative arrangement of the link 17 and connecting-rods 27 and 32 to the bell-crank lever 16 and with reference to its pivot 15 is clearly shown in Fig. 3, and it will be understood from a consideration of this drawing and of
55 the connection to the finger-beam through link 17 and arm 19 that the spring exerts a constant tendency to lift the outer end of the beam by reason of its eccentric connection thereto and that the lifting-lever is normally
60 inactive, but when drawn back it also exerts a lifting tendency on the outer end of the beam and coöperates with the spring; but its lifting tendency is greater than that of the spring by reason of the increased leverage
65 due to its connection with the bell-crank farther from its pivot.

The position of the parts when the machine

is moving over a level surface is shown in Fig. 4. If an obstruction be encountered, as illustrated in Fig. 5, the inner end of the
70 beam will rise, carrying up with it, of course, the outer end of the couplings and slightly shifting the positions of the bell-crank 16, the quadrant 24, and lever 30, and the lifting-lever, but without raising the outer end of
75 the beam. The permissible movement is sufficient to enable the inner end of the finger-beam to ride over any ordinary obstruction, such as a stone or hillock, without lifting the
80 outer end of the finger-beam.

When an unusual obstruction is encountered and it is desired to raise the inner end of the beam, the lifting-lever 22 is thrown back and coöperates with the spring to lift the
85 beam clear of the ground. When the lever 30 engages the stop 31 on the quadrant 24, both of the parts move in unison. The spring aids in the lifting movement, and as the quadrant 24 swings back the leverage of the
90 spring increases as its tension diminishes, and therefore enables the elevation of the beam sufficient to clear any ordinary obstruction with the expenditure of small force on the part of the driver. In this movement the piv-
95 oted arm or standard 19 engages the closed side of its recess formed by the lugs 20, and the beam is therefore locked rigidly to the bridge 10.

In order to utilize the power of the draft-animals to assist in raising the finger-beam,
100 the whiffletrees are hitched to a swinging coupling 33, pivoted to the tongue and connected at its lower end by the draft-rod 34 with a sleeve 35, mounted on the stud 25 and hav-
105 ing a hub 36 cut away to provide shoulders 37 to engage with a rib 38 of the casting forming the support for the tongue. The shoulders act as stops to limit the rocking movement of the sleeve 35 and hub 36. The draft-
110 rod 34 is connected eccentrically to the sleeve through the perforated lug 39 thereof, and the sleeve is also provided with another lug or eccentric portion 40, having a toe 41, which
115 is adapted to contact with a shoulder or stop 42, formed on the inner side of the bell-crank quadrant 24, as shown in dotted lines in Fig. 1 and in plan view in Fig. 2. In the former figure the draft-rigging is in the slackened condi-
120 tion; but when the machine is in motion the toe 41 engages the stop 42, and the pull of the draft-rigging tends to raise the quadrant 24 and assists the spring in maintaining the finger-beam in its floating position.

It will be observed that the lifting-lever 22 is free to move rearwardly, its rack-plate be-
125 ing provided with two stops 43 and 44, located in locking positions with reference to the beam when in its lowered and raised positions, respectively. In order to enable the driver to raise the finger-beam in turning
130 corners or in passing obstructions without using his hands, I connect to the pivot of the hand-lever 22^a foot-lever 45, so that the driver may with his foot move the hand-lever to its

extreme rearward position and raise the beam clear of the ground, as shown in Fig. 5.

From the foregoing description of the finger-beam connections it will be seen, first, that the finger-beam is flexibly suspended from the main frame, so as to ride lightly upon the ground, and hence is a floating beam; second, that the inner end of the beam may rise freely, carrying up with it the outer end of the coupling members and the spring and lever connections; third, that the spring through its connecting-rod has a constant tendency to lift the outer end of the beam, which tendency is overborne by the weight of the outer end of the bar, so that said outer end follows the inequalities of the ground; fourth, that the lifting-lever is so arranged as to exert when thrown back sufficient force to lift the outer end of the bar and in this action is assisted by the spring, and, fifth, that the power of the draft-animals is also utilized to assist in flexibly suspending the beam and in raising it clear of the ground.

Without limiting my invention to precise details of construction, arrangement, and combination of parts, except as hereinafter pointed out in the claims, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a mower, the combination with the main frame, finger-beam and coupling-bar, of means for exerting a constant lifting tendency on the finger-beam, said means comprising a lifting-spring connected to the frame, a bell-crank pivotally mounted on the coupling-bar, a connection between one arm of the bell-crank and the spring, and a connection between the other arm of the bell-crank and the finger-beam, and a lifting-lever connected to that arm of the bell-crank to which the lifting-spring is connected, but at a point farther from the pivot of the bell-crank, said lifting-lever being normally inactive, but adapted when operated, to coact with the

spring in lifting the beam, but with a greater leverage, substantially as described.

2. In a mower, the combination with a main frame and finger-beam hinged thereto, of a quadrant pivoted on the main frame, a spring flexibly connected to the main frame and to said quadrant, a bell-crank lever pivoted on the finger-beam coupling, a link connecting the quadrant and one arm of the bell-crank, and a link connecting the other arm of the bell-crank and the finger-beam, a lifting-lever pivoted on the main frame, a double-armed lever pivoted on the quadrant and connections between the double-armed lever and the lifting-lever and between the double-armed lever and the bell-crank, the latter connection being to the same arm to which the spring is connected but farther from the pivot of the bell-crank, and a stop for locking the double-armed lever to the quadrant whereby the spring has a tendency to lift the outer end of the finger-beam, while the lever is normally inactive but coacts with the spring to lift the beam clear of the ground, substantially as described.

3. In a mower, the combination with the main frame, of a floating finger-beam hinged thereto, spring connections between the main frame and the finger-beam, the spring whereof is connected directly with the frame and exerts a constant tendency to lift the beam, a lever pivoted on the main frame and forming an element of the said spring connections and to which the spring is directly connected, a draft-rigging and a non-elastic connection directly joining the draft-rigging and said pivoted lever whereby the power of the draft-animals is applied directly to the lifting of the finger-beam, substantially as described.

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