

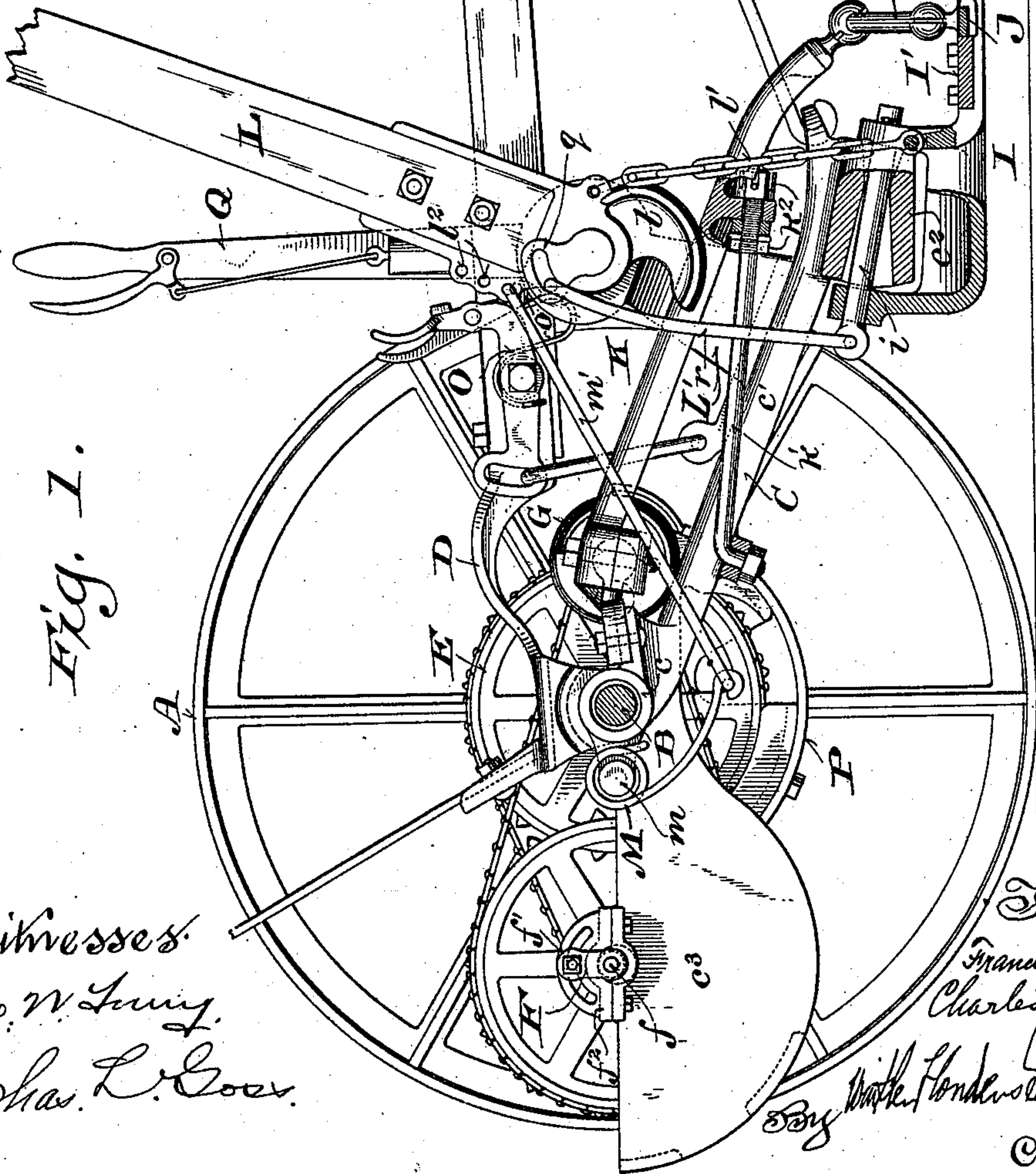
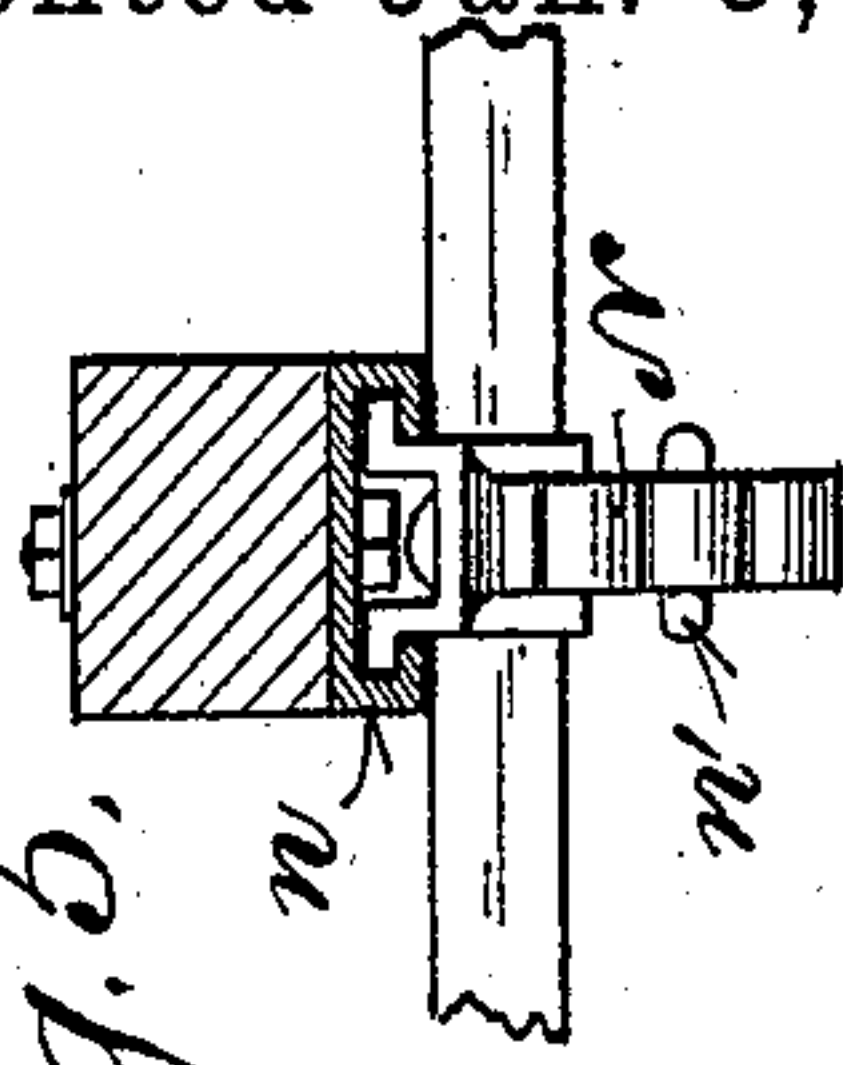
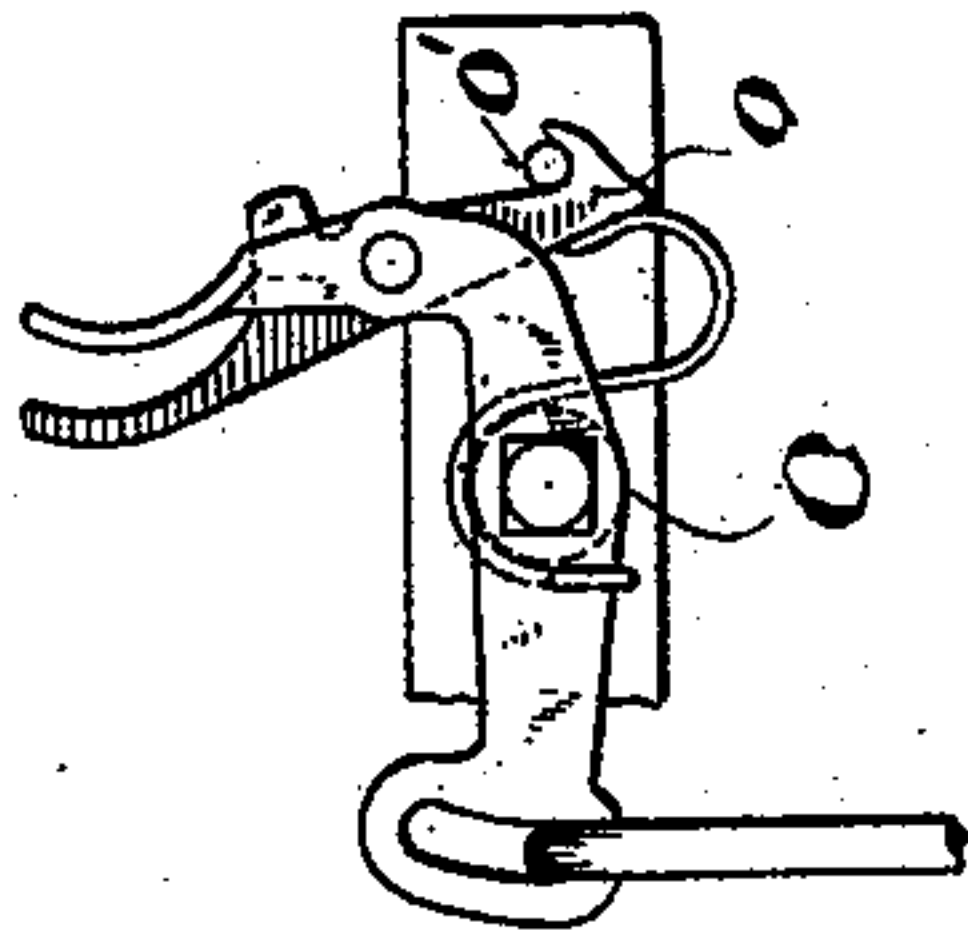
(No Model.)

2 Sheets—Sheet 1.

F. N. VIOLET & C. H. SHAW.
MOWING MACHINE.

No. 574,505.

Patented Jan. 5, 1897.



Witnesses:
Geo. W. Loring.
Chas. L. Good.

Inventors:
Francis X. Violet
Charles W. Shaw,
London Smith & Attridge
Attorneys

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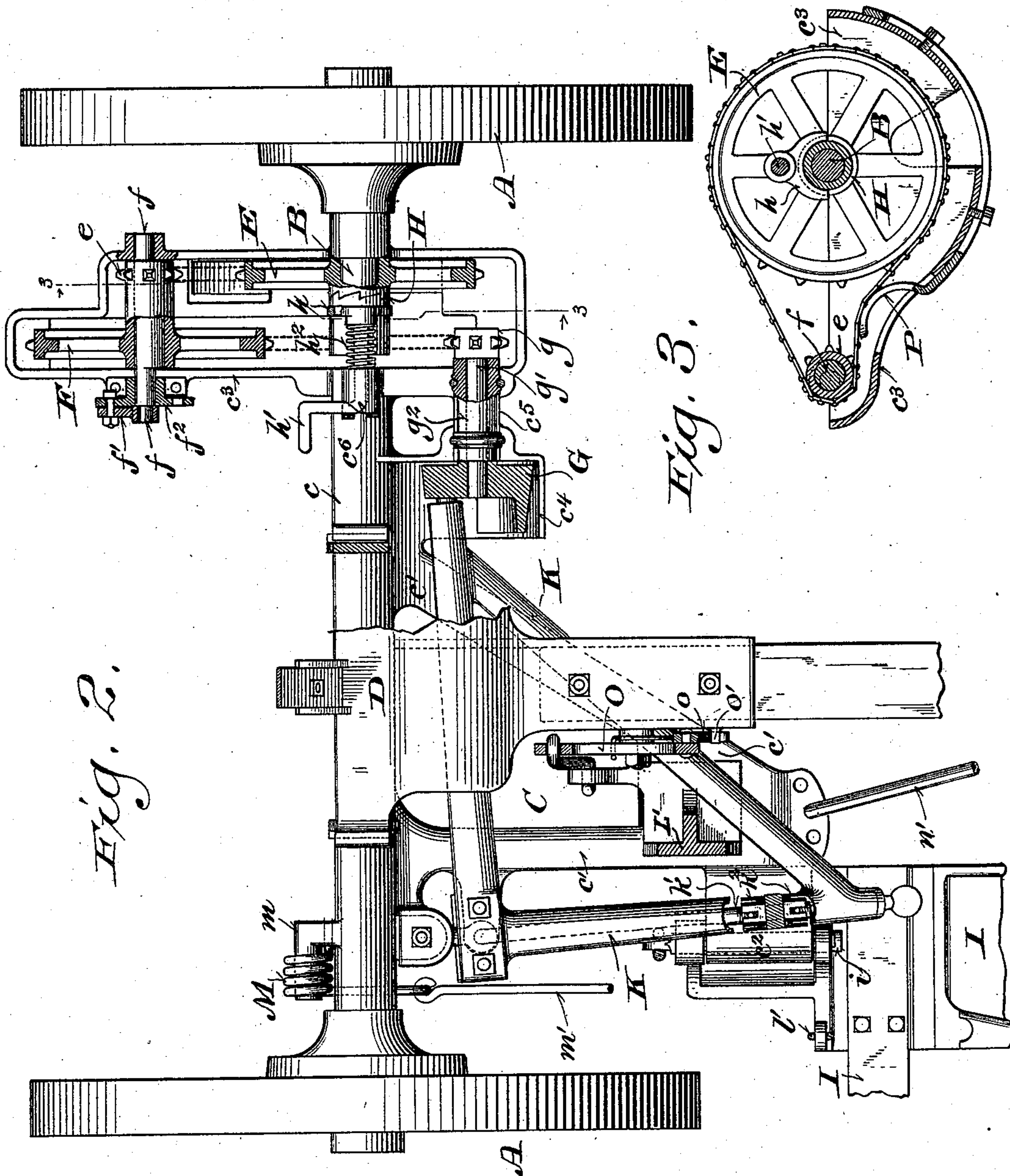


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANCIS N. VIOLET, OF MILWAUKEE, AND CHARLES H. SHAW, OF
WAUWATOSA, WISCONSIN.

MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 574,505, dated January 5, 1897.

Application filed May 23, 1893. Serial No. 475,215. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS N. VIOLET, of Milwaukee, and CHARLES H. SHAW, of Wauwatosa, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Mowing-Machines; and we 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 pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

Our invention relates to that class of front-cut mowing-machines in which the crank or fly wheel is connected with the cutter-bar or knife by a triangular or elbow-shaped lever. Its main objects are to support the front end of the triangular lever in proper working position, to dispense entirely with spur and bevel gears, to prevent the cutting apparatus from dragging heavily on the ground, and thereby to avoid side draft and to diminish the direct draft of the machine, and generally to simplify and improve the construction of the machine.

It consists of certain peculiarities of construction and arrangement of the component parts of the machine, hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a side elevation of a mowing-machine embodying our improvements, the front wheel being removed and certain parts shown in vertical section. Fig. 2 is a plan view, certain parts being broken away and shown in horizontal section. Fig. 3 is a vertical longitudinal section through the gear-case on the line 3 3, Fig. 2. Fig. 4 is a detail view in side elevation of the foot lifting-lever; and Fig. 5 is a cross-section of the pole on the line 5 5, Fig. 1, showing the draft connection in front elevation.

A represent the main wheels, which are mounted upon and have the usual ratchet connections (not shown in detail) with the axle B.

C is the main frame, comprising a tubular portion c , through which the axle B passes and in which it is provided with bearings, the forwardly-projecting converging arms c' c' , formed at or near their intersection on one side with a sleeve c^2 for the attachment of the shoe.

D is the tongue and seat support, loosely attached to the upper side of the tubular portion c of the main frame and arched upwardly therefrom over the rear side of the triangular lever. The main frame is also formed or provided at the outer end of the tubular portion c with a gear-case c^3 and on the front side of said tubular portion with a housing or guard c^4 for the fly or crank wheel. The front portion of the gear-case c^3 and the wheel-guard c^4 are connected in a line parallel with the axle by a semicylindrical seat c^5 .

The parts of the main frame above enumerated, together with the gear-case and fly-wheel guard and the seat c^5 , may be conveniently cast integrally, but may be constructed in separate parts and attached to each other in any suitable manner.

E is a sprocket-wheel loosely mounted upon the axle B within the gear-case c^3 . It is formed or provided at the inner end of its hub with one member of a clutch and is connected by a chain belt with a smaller sprocket-wheel e , loosely mounted upon a shaft f , supported in the rear portion of said gear-case parallel with axle B.

F is a sprocket-wheel of approximately the size of the sprocket-wheel E, also loosely mounted upon the shaft f' and formed with or rigidly attached to the sprocket-wheel e . It is connected by a chain belt with a sprocket-wheel g on the outer end of the fly-wheel shaft g' , which is supported in front of and parallel with the main axle in a sleeve g^2 , which is fitted to and held by clips in the seat c^5 , provided on the main frame for its reception. To the inner end of the shaft g' , within the wheel-guard c^4 , is fixed the fly and crank wheel G. The counter-shaft f has eccentric bearings in the rear portion of the gear-case and is provided at the inner end with an arm f' , which is adjustably secured in place by a bolt passing through an arc-shaped slot in the

flanged box-cap f^2 . By this means the shaft f may be slightly shifted forward or backward parallel with the axle B and the chain belts simultaneously tightened.

5 H is the other member of the clutch, mounted and movable endwise, but held in any suitable manner from turning upon the axle B adjacent to the inner end of the hub of sprocket-wheel E. It is formed with a circumferential groove to receive a fork h , which
10 is connected by a crank-shaft with a sleeve c^6 on the upper side of the tubular part of the main frame. A spiral spring h^2 is interposed between said fork and sleeve upon said crank-
15 shaft and tends to move and hold the movable clutch member H in engagement with the other member on the hub of sprocket-wheel E. The inner end of the sleeve c^6 has an incline or cam formation with which the
20 crank portion of said crank-shaft engages and by which it is moved endwise toward the center of the machine when it is turned forward, thereby disengaging the clutch members.

I is the shoe, to which the inner end of the
25 finger-bar I' is rigidly attached. It is connected with the main frame by a pin i , passing through two upturned perforated ears formed thereon and through the sleeve c^2 , the hole in which is made conical or tapering, as
30 shown in Fig. 1, so as to permit of the tilting or oscillation of the finger-bar.

J represents the knife or cutter-bar.

K is a triangular lever connected at one end or corner with the crank-pin on fly-wheel G
35 and at the diagonally-opposite corner by a short pitman k with the knife or cutter-bar. At the intermediate corner it is supported upon a ball-bearing which is formed with or rigidly attached to the main frame in line
40 with the crank-wheel shaft g' . k' is a brace swiveled at its front end in a perforated ear on the under side of said triangular lever and bent at its rear end substantially at right angles and swiveled in a perforated ear on the
45 main frame below said ball-bearing. The front end of said brace is screw-threaded and provided on each side of the ear through which it passes with adjusting-nuts k^2 , by which it may be in effect lengthened or shortened and the front end of the triangular lever
50 correspondingly raised or lowered. By means of this supporting-brace we are enabled to dispense with overhead hangers, which are in the way and produce an objectionable
55 movement in the front end of said triangular lever.

Our improved supporting-brace is entirely out of the way, produces a rectilinear horizontal movement of the front end of said triangular lever, firmly supports it in its proper
60 working position without interfering with its free movement, and affords means of adjusting the front end of said lever vertically.

L is the lifting-lever, fulcrumed to a bracket
65 or standard L' on the main frame and provided at its lower end with a segment or lifting-quadrant l , which is connected by a chain l'

with an ear on shoe I a little outside of its hinge connection with the main frame, as shown in Fig. 2.

70 Q is the tilting lever fulcrumed to the same bracket or standard with the lifting-lever L and fixed to a pivot-pin or journal which passes through the hub of said lever L and is provided on the opposite side thereof with a
75 transversely-slotted arm q , which is connected by a rod r with the rear end of the pivot-pin i . The slot in arm q , with which the rod r connects, permits of the ordinary oscillatory movement of the finger-bar to conform with
80 variations in the surface in passing over uneven ground.

M is a spring coiled around a stud m on the rear side of and parallel with the tubular part
85 c of the main frame and connected at one end by a rod m' with the stub of lever L, which is provided with a series of holes l^2 for the attachment of said rod at different distances from the fulcrum of said lever, whereby said spring may be connected to exert greater or
90 less leverage upon the cutting apparatus.

N is a slide to which the evener is attached, freely movable lengthwise in a guide or keeper
95 n , attached to the under side of the pole, as shown in Figs. 1 and 5. It is formed with a vertical series of notches for the adjustable attachment of the draft-bar n' , which is connected at its rear end with the front end of the main frame near the ground, so as to cause the draft to exert a lifting tendency upon the
100 inner end of the finger-bar and cutting apparatus. The connections of the lifting-lever L and spring M with the cutting apparatus are such as to cause them to exert a lifting tendency on the outer end of the finger-bar
105 and cutting apparatus. Hence the draft connection and the spring M cooperate to sustain and take the weight of the cutting apparatus off from the ground at both ends of the finger-bar. The front end of the main frame C
110 is provided with a series of holes arranged horizontally and transversely to the line of travel of the machine for the attachment of the rear end of the draft-bar, so that it may be adjusted to produce more or less side draft
115 on the main frame and thereby counteract the tendency of the cutting apparatus in the opposite direction.

O is an elbow-shaped foot-lever fulcrumed to a stud on one side of support D and connected by a rod with the main frame C. It
120 is provided with a spring-actuated catch o , pivoted thereto and arranged to automatically engage a pin or projection o' on the pole to hold the main frame in an elevated position.
125 This catch is formed at the upper end with a foot-piece by which it may be thrown out of engagement with said pin or projection by the foot. The lever O is formed with a vertical slot in which the upper end of said connecting-rod is inserted, so as not to interfere with
130 the ordinary vertical movement of the cutting apparatus in passing over uneven ground or prevent the further elevation of the shoe I

from the position in which it is shown in Fig. 1 in case it should strike an obstruction.

P is a guide projecting upwardly through an opening in the bottom of the gear-case c^3 , to which it is adjustably attached, as shown in Fig. 3. It bears against the under side of the chain belt connecting the sprocket-wheel E with the sprocket-wheel e , taking up the slack in the under side of said chain belt and affording means of adjustment whereby it may be kept uniformly taut with the other chain belt.

By arranging the fly-wheel shaft g' parallel with the main axle and connecting the triangular lever by a universal joint with the main frame in line therewith we are enabled to dispense with bevel-gears and to employ driving mechanism composed entirely of sprocket-wheels and chain belts, which are less expensive than spur-gearing and run easier, with less noise, and may be all inclosed together in one case.

By the arrangement of the spring M and the mode of attaching it to the frame and connecting it with the cutting apparatus, as hereinbefore described, the weight of the cutting apparatus is not carried by the pole and through it transmitted to the horses' necks, as with many, if not all, devices heretofore devised for the purpose, but by the main frame, with which the pole is pivotally or loosely connected, the draft tending, when the machine is in operation, to lift it from the ground.

The operation of our improved machine will be understood by those familiar with the art to which it pertains from the foregoing description of its construction without further explanation.

We claim—

1. In a mowing-machine, the combination with the main frame, the cutter-bar and its actuating-crank, of a triangular lever connected at diagonally-opposite corners with said cutter-bar and crank and at the intermediate corner by a universal joint with the frame of the machine in line with the crank-shaft, a brace pivoted at its rear end to said frame below said universal joint and adjustably connected at its front end with the under side of said triangular lever whereby the front end of said lever may be raised and

lowered with respect to said frame, substantially as and for the purposes set forth.

2. In a mowing-machine, the combination with the main frame and the pole and cutting apparatus having jointed connections therewith, of a lifting-lever connected with the cutting apparatus and fulcrumed to said frame independently of the pole, and a spring attached to the main frame and connected with said lifting-lever so as to exert a lifting tendency upon the outer end of the cutting apparatus without adding weight to the pole, substantially as and for the purposes set forth.

3. In a mowing-machine, the combination with the main frame formed or provided with a stud close to and parallel with the axle, and the pole and cutting apparatus having jointed connections therewith, of a lifting-lever connected with the cutting apparatus and fulcrumed to said frame independently of the pole, and a spring coiled around said stud and attached at one end to said frame and connected at the other with said lifting-lever so as to exert a lifting tendency upon the outer end of the cutting apparatus without adding weight to the pole, the stub of said lifting-lever being provided with a series of holes for the adjustable connection of said spring, substantially as and for the purposes set forth.

4. In a mowing-machine, the combination with the main frame and the pole and cutting apparatus having jointed connections therewith, of a lifting-lever fulcrumed to said frame independently of the pole and connected with the cutting apparatus, a spring connected with said lever and the frame of the machine so as to exert a lifting tendency at the outer end of the finger-bar without adding weight to the pole, and a sliding draft connection with the pole attached to the frame near the ground so as to exert a lifting tendency at the inner end of the finger-bar, substantially as and for the purposes set forth.

In testimony that we claim the foregoing as our own we affix our signatures in presence of two witnesses.

FRANCIS N. VIOLET.
CHARLES H. SHAW.

Witnesses:

CHRIS. W. CHADIM,
CHAS. L. GOSS.