

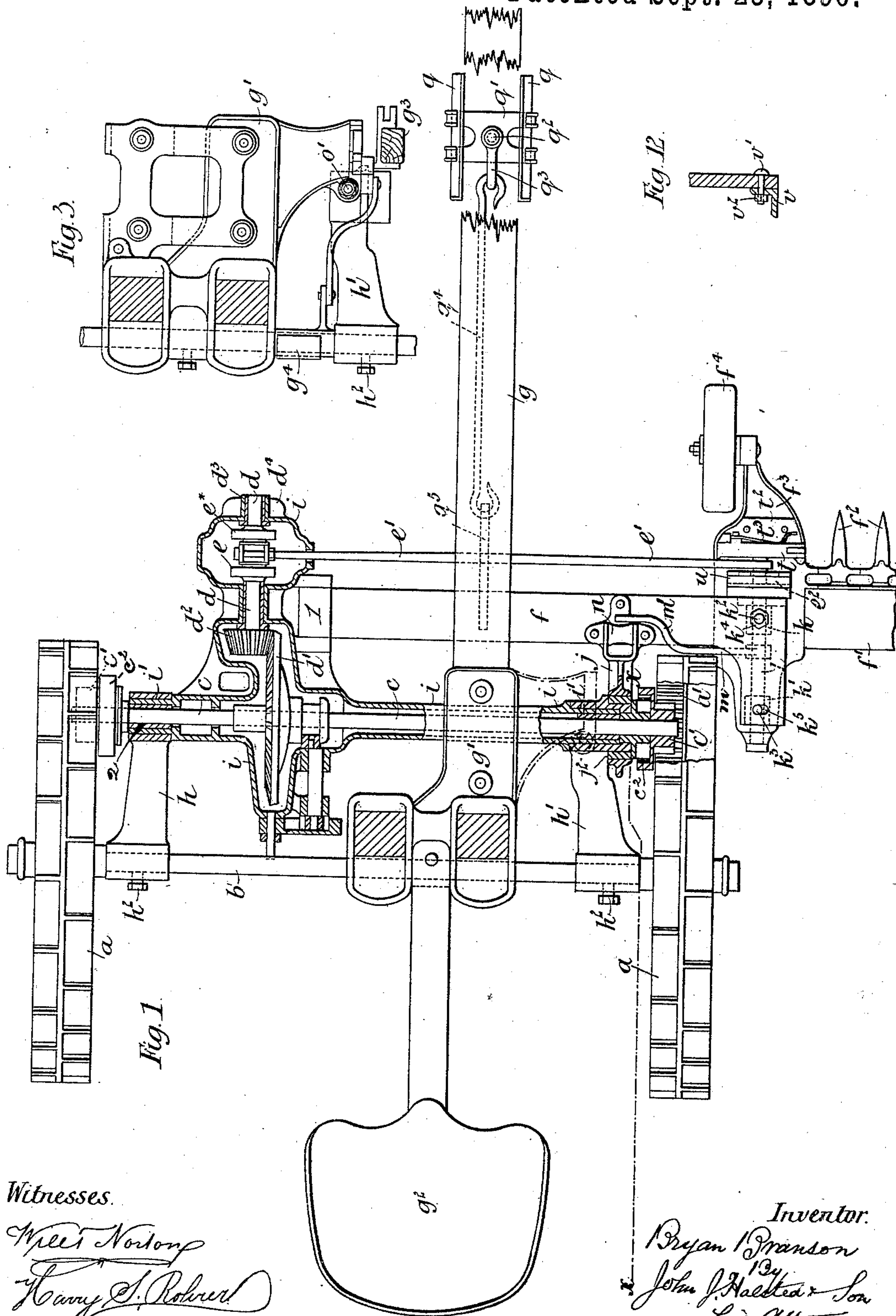
(No Model.)

4 Sheets—Sheet 1.

B. BRANSON.
MOWING MACHINE.

No. 436,912.

Patented Sept. 23, 1890.



Witnesses.

Wm. Norton
Harry S. Parker

Inventor.

Bryan Branson
John J. Hallett & Son
His Attorneys

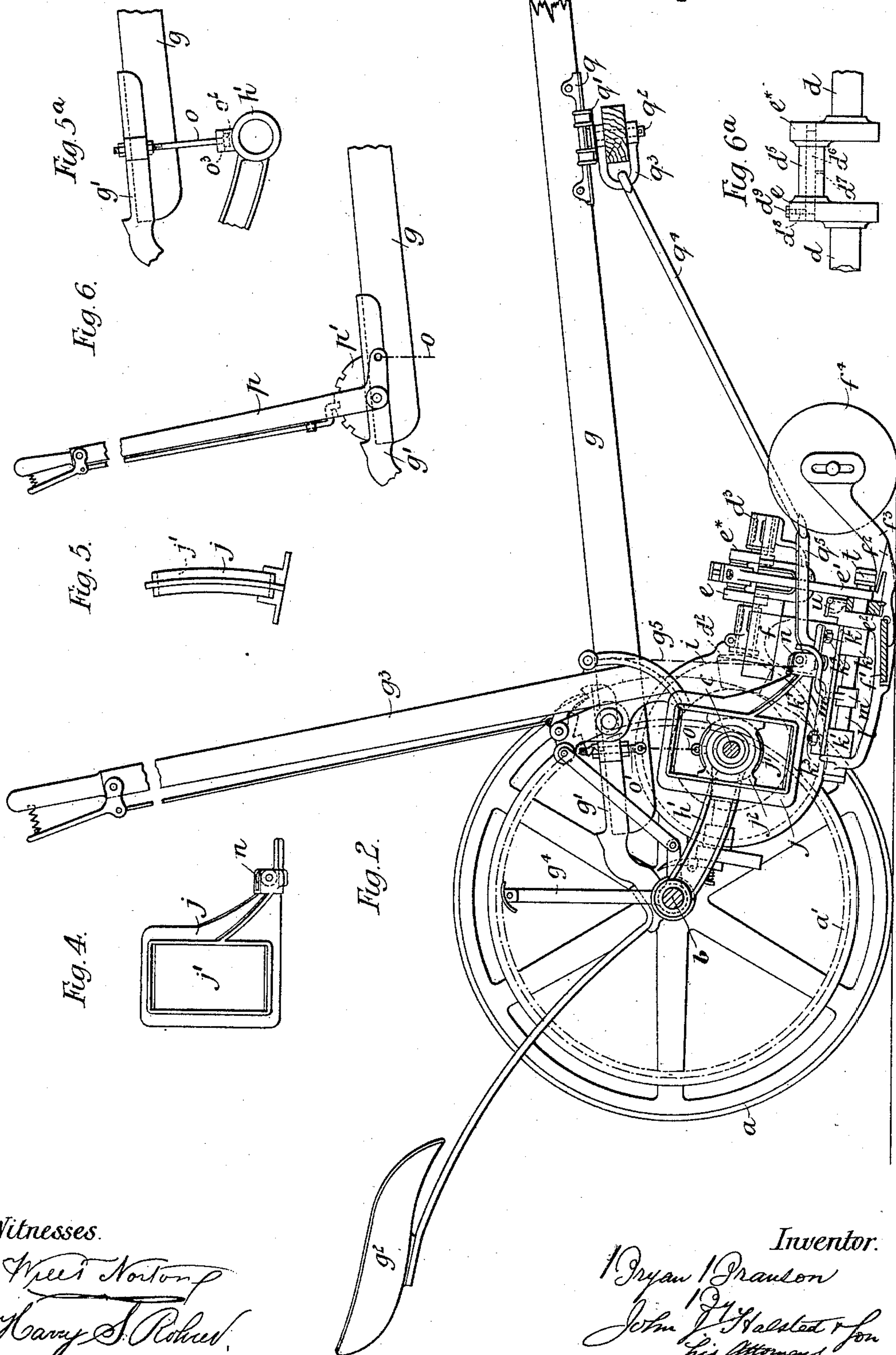
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4 Sheets—Sheet 2.

B. BRANSON.
MOWING MACHINE.

No. 436,912.

Patented Sept. 23, 1890.



Witnesses.

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(No Model.)

4 Sheets—Sheet 3.

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MOWING MACHINE.

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Fig. 9.

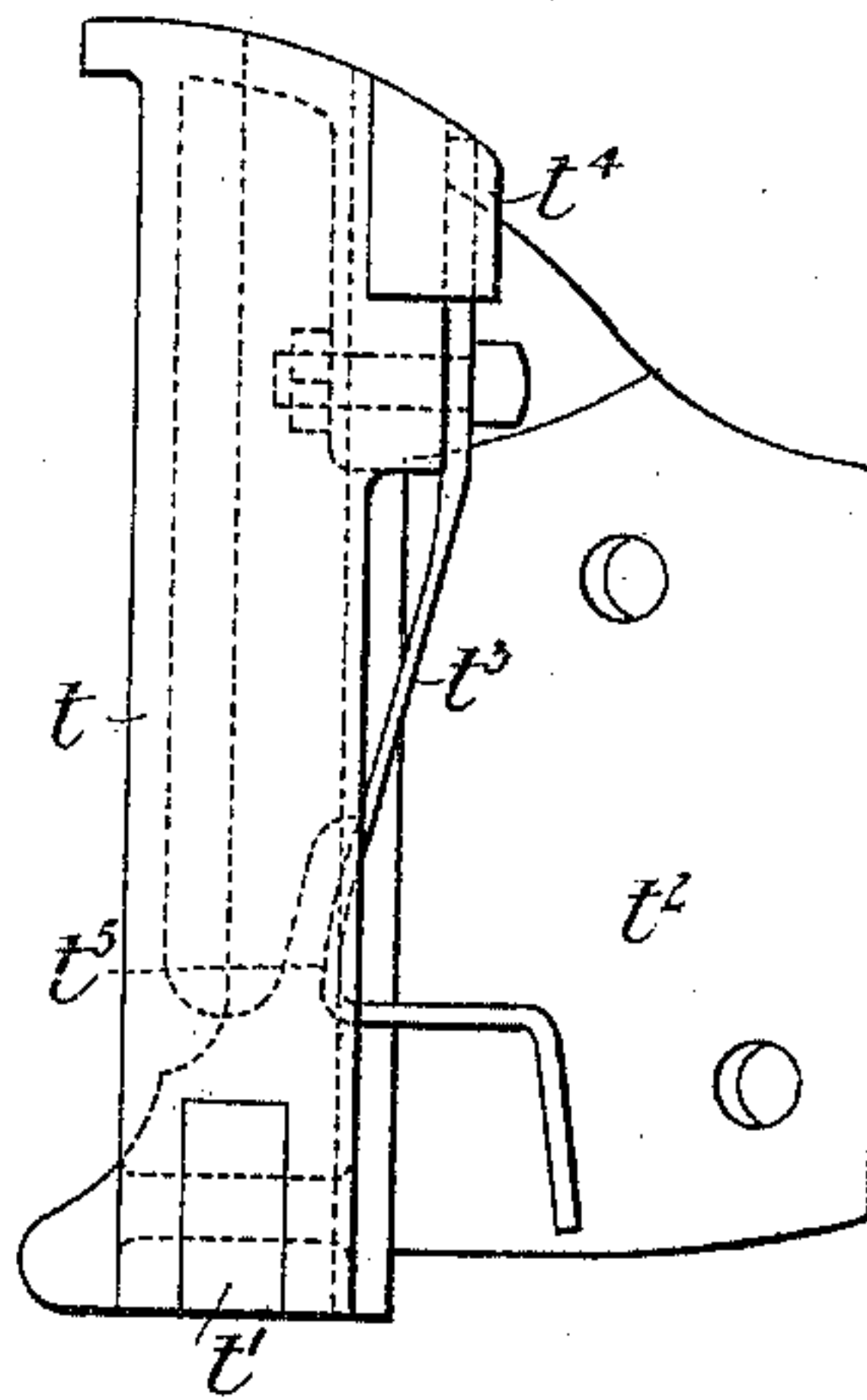


Fig. 10.

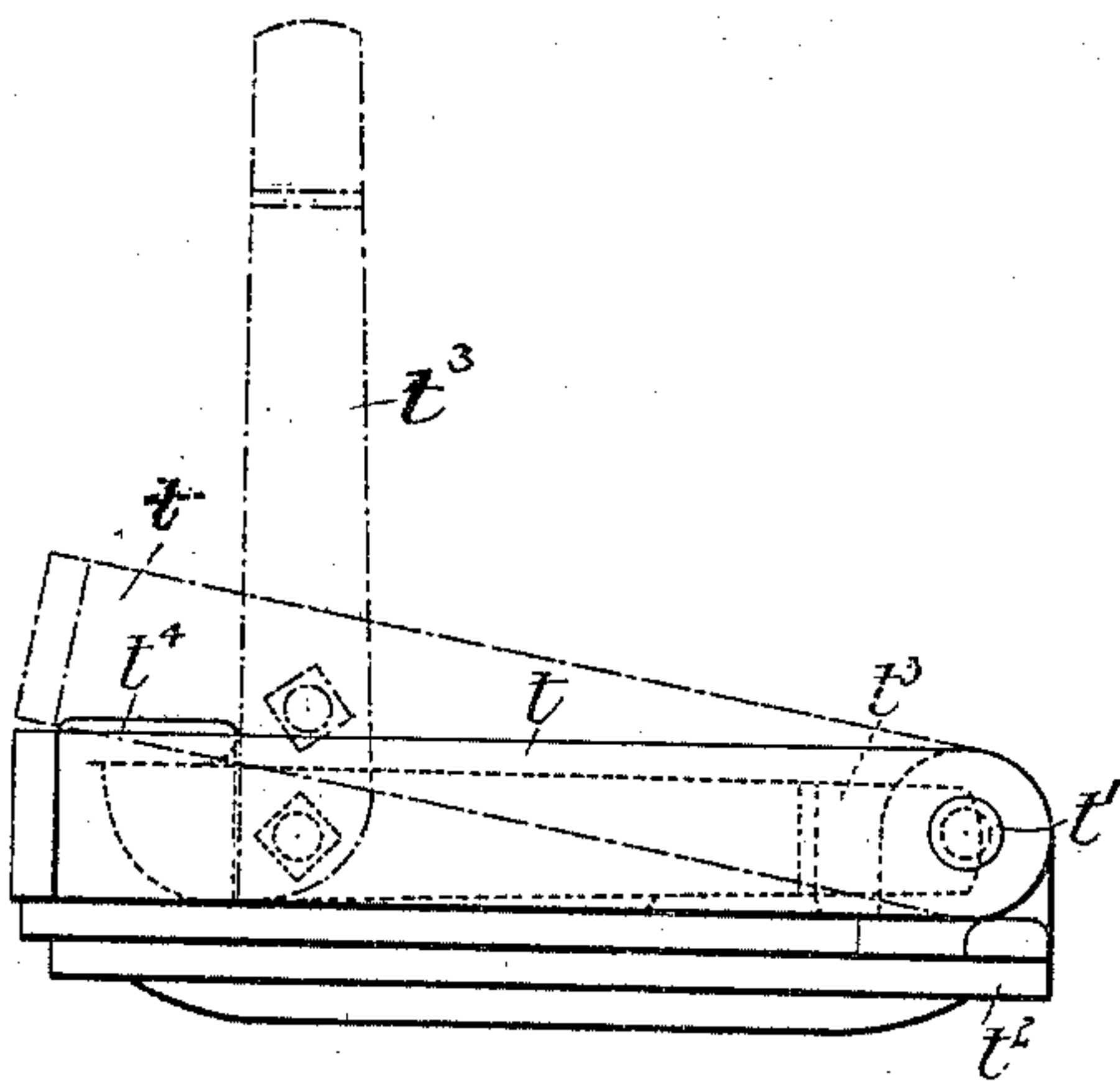


Fig. 11.

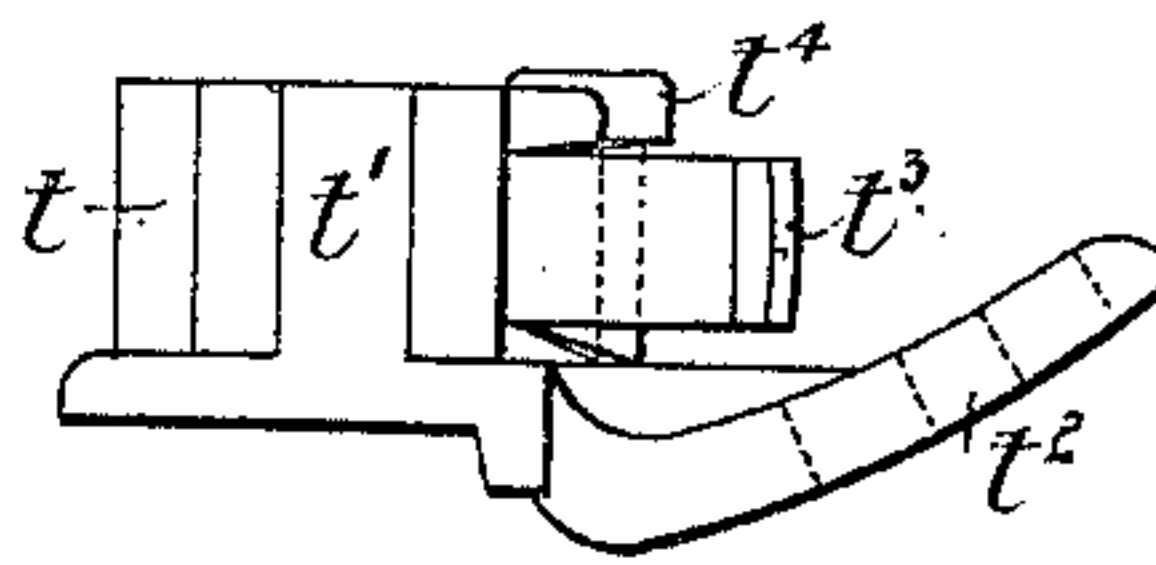


Fig. 7.

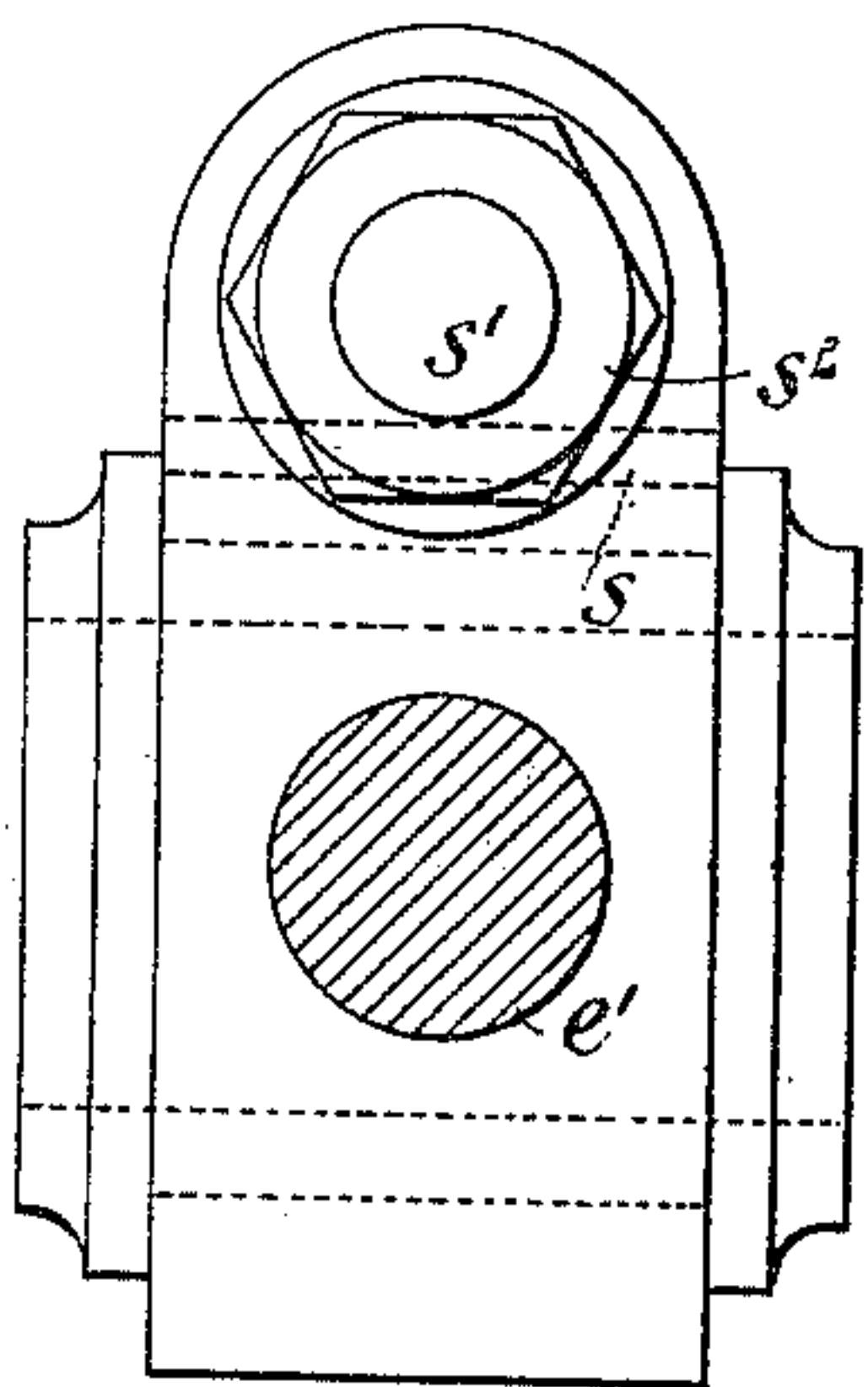
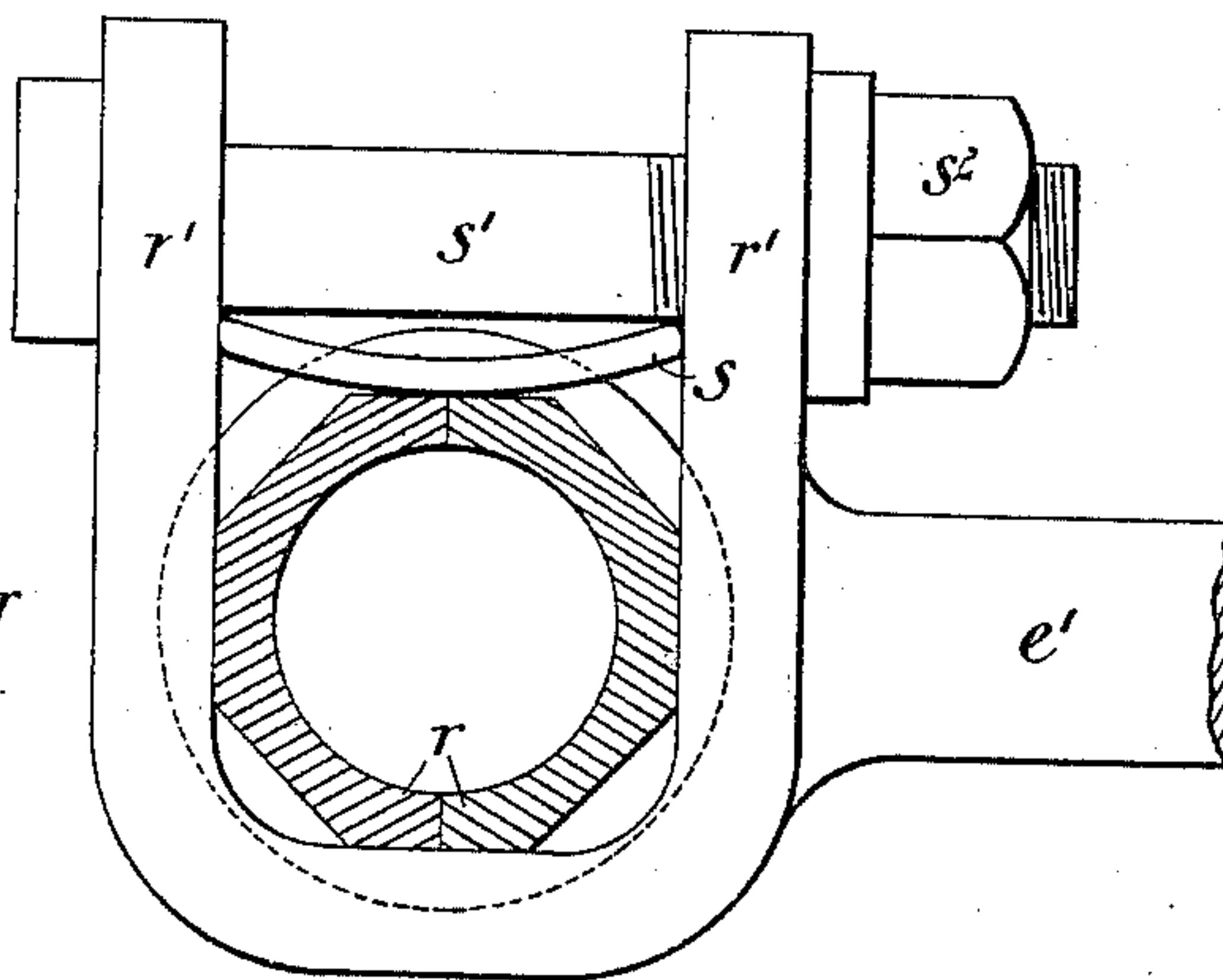


Fig. 8.



Witnesses

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(No Model.)

4 Sheets—Sheet 4.

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MOWING MACHINE.

No. 436,912.

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Fig. 13.

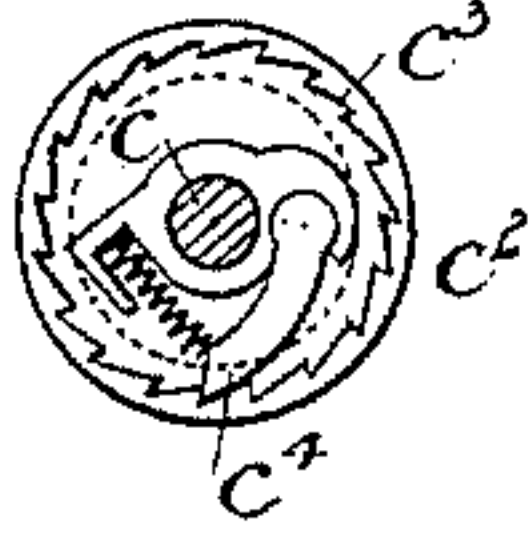


Fig. 14.

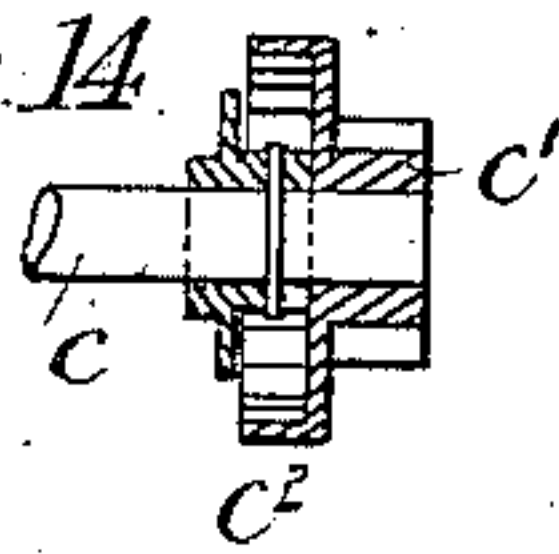


Fig. 15.

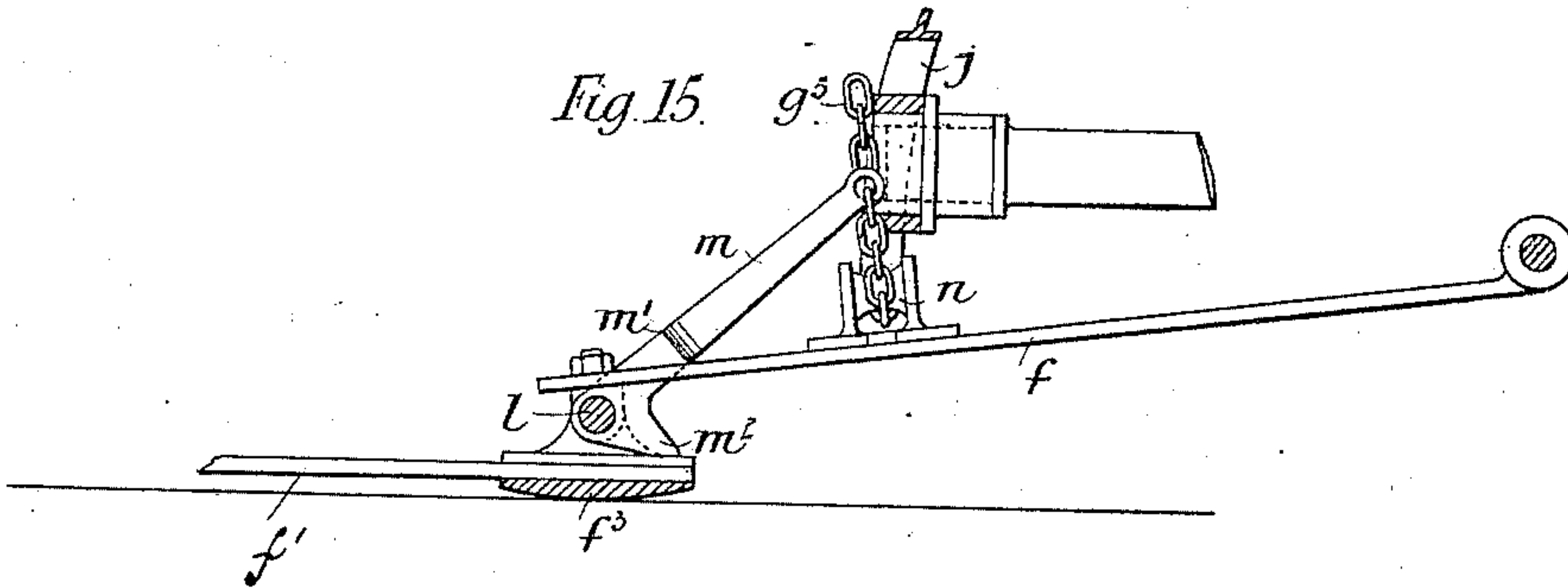


Fig. 16.

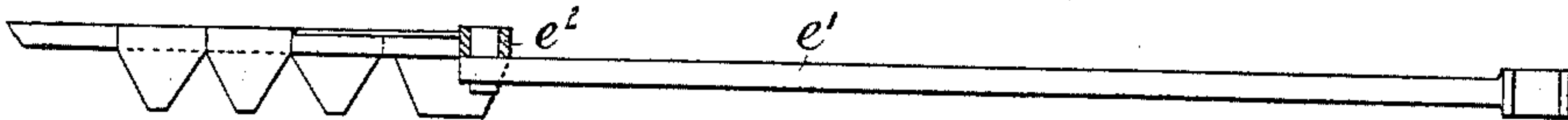


Fig. 17.

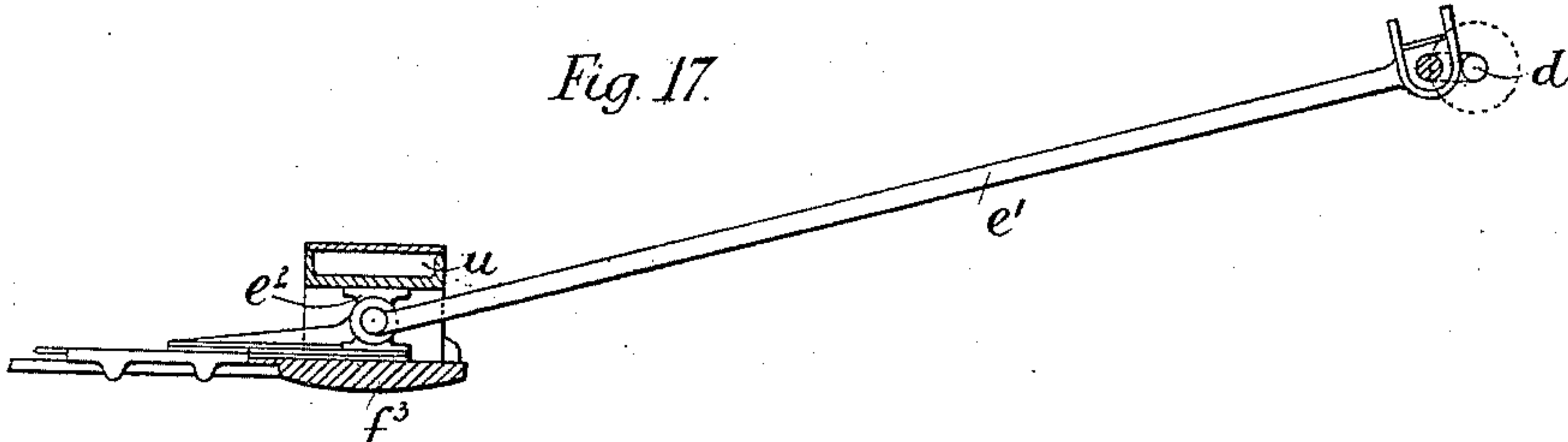
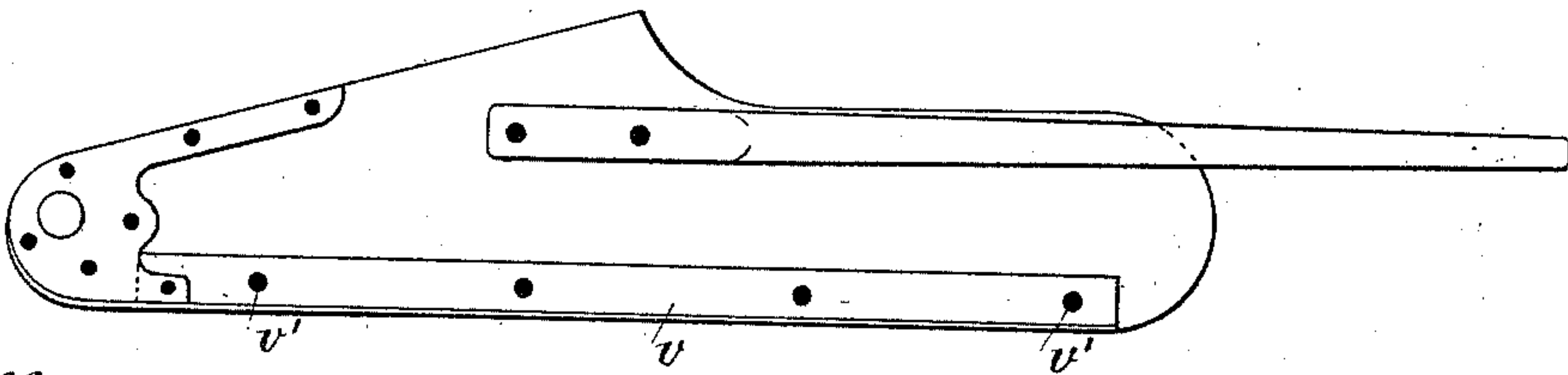


Fig. 18.



Witnesses.

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UNITED STATES PATENT OFFICE.

BRYAN BRANSON, OF GRANTHAM, ASSIGNOR TO EDWARD CHRISTOPHER
BLACKSTONE, OF STAMFORD, ENGLAND.

MOWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 436,912, dated September 23, 1890.

Application filed February 11, 1890. Serial No. 340,001. (No model.)

To all whom it may concern:

Be it known that I, BRYAN BRANSON, a subject of the Queen of Great Britain, residing at Grantham, England, have invented new and
5 useful Improvements in Mowing-Machines, of which the following is a specification.

My invention relates to mowing-machines; and it consists chiefly in the provision of improved means for enabling the finger-bar
10 to follow the inequalities of the ground more freely than heretofore by hinging or pivoting the main casting or framing carrying the hinge-beam to a part of machine nearer the
15 said hinge-beam and knife-bar than the axle, to which it has hitherto been the practice to hinge it; but my invention also comprises other improvements, all as hereinafter described, and pointed out in the claims.

In carrying my invention into practice I
20 key or otherwise fix upon the main axle of the machine brackets or arms, the free ends of which serve as bearings for the main casting to hinge or turn in, and the first motion spindle is journaled within the said main
25 casting. By this arrangement the spindle can rotate independently of the casting and the casting can hinge or turn independently of either the arms or the spindle. The main casting is arranged at the front or rear of the
30 main axle according as to whether the machine is to have a front or back axle, and it is constructed to inclose the first-motion spindle and the bevel wheels for driving the crank-spindle which operates the knife, the
35 said crank-spindle being also inclosed within it. The first-motion spindle is provided with spur-pinions which are driven from the driving or carrying wheels in the usual manner.

The hinge-beam, which is hinged to the
40 main casting in the usual manner, is provided with a stay which is slotted so as to embrace a block journaled on the free end of one of the arms or brackets hereinbefore described, thereby enabling the beam to move freely up
45 and down, and at the same time prevent it being strained by the pressure on the finger-bar. The free end of the hinge-beam is hinged to the finger-bar in the usual manner, and means are provided for adjusting or
50 bringing them into their proper relative po-

sitions after having been thrown out of alignment by the wear of their connecting-joint due to the constant strain on the finger-bar.

I preferably attach the lock-bar to the joint-pin instead of providing special means for its
55 attachment, as has heretofore been the case.

The pole-bracket is fixed or keyed upon the main axle, and is connected to one of the brackets or arms by means of a chain or
60 sliding bolt capable of adjustment by means of screwed nuts or by a bell-crank hand-lever working over a notched quadrant. By this arrangement the pole-bracket serves to support the brackets and parts connected thereto, and the adjustment allows of the relative po-
65 sitions of the said pole bracket and arm being varied to suit the height of the horse employed.

The crank for driving the knife I prefer to form double, so as to enable the crank-shaft to be extended and supported by means of an
70 additional bearing on the crank-shield. Suitable means are provided for lubricating the pin of the said crank.

Instead of placing the guides for the whiffletree-slides underneath the pole, as is usual, I
75 attach them to the sides of the same. By this arrangement the slides can be easily lubricated and the whiffletree is maintained in a level position. The said whiffletree is attached to the slide by a central bolt, to which is at-
80 tached a loop or eye for connecting the pole by a draw-bar to an extension on the hinge-beam.

I construct the crank end of the connecting-rod of a U or similar shape, to receive the two
85 halves of the bush. A curved spring is arranged in connection with the said bush, the center of which bears upon the upper side of the bush, while its ends are in contact with the sides of the U-shaped end, which sides
90 are connected by a bolt and nut, so that by turning the said nut the sides of the said U-shaped end will be drawn together, so as to take up the wear of the halves of the bush, and the ends of the spring will be pressed
95 nearer together, thereby causing the center of the said spring to press on the top of the bush. I also make use of an improved form of rod-stop, by means of which the connecting-rod can be more readily removed than heretofore, 100

Upon the slade or inner shoe, just above the knife end, I arrange a grease-box to lubricate the slide and knife end.

Instead of constructing the track-board with a flat plate on its under edge, I preferably arrange an angle-iron instead, it being fastened to the said board by means of bolts and nuts.

To enable my invention to be fully understood, I will describe how it can be carried into practice by reference to the accompanying drawings, in which—

Figure 1 is a sectional plan of the main portion of a mowing-machine constructed according to my invention. Fig. 2 is a sectional side elevation of the same, the section being taken on the line $x x$ of Fig. 1. Fig. 3 is a plan of the pole-bracket and some of the adjacent parts. Figs. 4 to 12 are views of details fully hereinafter described, and Figs. 13 to 18 details showing the clutch lock-bar, the connection between the connecting-rod and the knife-rod, and an elevation of the track-board.

Similar reference-letters indicate similar parts throughout the drawings.

Referring to Figs. 1 and 2, $a a$ are the driving or carrying wheels mounted on the main axle b , and c is the first-motion spindle, which is driven from the teeth a' on the said wheels through the medium of spur-pinions $c' c'$.

$c^2 c^2$ are the clutches which form part of and serve to connect the pinions $c' c'$ with the spindle c , and by which the cutting mechanism is operated only when the machine is drawn forward. One of these combined clutches and pinions is shown in elevation and section at Figs. 13 and 14, respectively, the clutch portion consisting of a projecting flange on the pinion c' , provided with ratchet-teeth c^3 , with which engages a spring-pawl c^4 , pivoted to a block fixed to the spindle c .

d is the crank-shaft driven from the spindle c , through the medium of bevel-wheels d' and d^2 , and serving to actuate the knife (not shown in the drawings) by means of the crank e , connecting-rod or pitman e' , and sliding block or knife end e^2 .

f is the hinge-beam hinged to the main casting at l , to which is jointed the finger-bar f' , provided with the fingers f^2 , and f^3 is the slade or shoe attached to the said bar and carrying the adjustable guide or leading wheel f^4 .

g is the pole which is connected by the pole-bracket g' to the main axle b , and which carries the driver's seat g^2 .

g^3 is the lever-handle, mounted on the side of a segment-rack on the pole-bracket g' , and g^4 the foot-lever for lifting the hinge-beam and finger-bar through the medium of the chain g^5 , this lever being a bell-crank lever pivoted at its angle on shaft b and connected by a link to the hand-lever g^3 . The chain g^5 is connected to a segment casting at the lower end of this hand-lever, and from thence passes under a sheave or pulley n in the lower forward extension of the stay j , and is connected to the inner end of the lock-bar m .

All the foregoing parts are of known construction.

I will now describe my improvements.

$h h'$ are the brackets or arms, which are fixed on the main axle b by screws h^2 or the like, and i is the main casting journaled therein at $i' i'$. The first-motion spindle c is also journaled in bushings 2 in the interior of the journals i' of the main casting. By this arrangement it will be seen that the finger-bar f' , knife, and parts connecting them to the main casting, and the main casting itself, have an oscillating or hinging movement at a point nearer to them than the main axle and upon the first-motion spindle c , and independent thereof, thereby enabling the said bar and knife to follow the inequalities of the ground more freely than heretofore.

j is the stay, having a forward projection, which is attached rigidly to the hinge-beam f , and j' is the slot therein to enable it to embrace the block j^2 , journaled on the free end of the bracket h' . The said stay is shown detached in side and end elevation in Figs. 4 and 5, respectively.

For adjusting the relative positions of the hinge-beam f and finger-bar f' , as hereinbefore described, I form the joint or hinge by means of two bosses $k k'$, which work on the pin l on the said finger-bar and are provided with pins $k^2 k^3$ and nuts $k^4 k^4$ to enable them to be attached to the said hinge-beam, the pin k^2 passing through a hole at the front of the said beam and the pin k^3 through a slot k^5 at the rear, so as to enable the finger-bar to be brought into alignment with the hinge-beam, the pin k^3 moving in the said slot, while the pin k^2 serves as a pivot for the finger-bar to turn upon. After having been moved into alignment, I prefer to insert in the space in the slot k^5 behind the pin k^3 a metal packing-piece, so as to take the strain off the said pin. In Fig. 1 the nut on the pin k^3 is omitted, in order to clearly show the slot k^5 .

m is a lock-bar, which actuates the finger-bar f' and works on the joint-pin l , as shown most clearly in Fig. 15, which represents a side view of the said bar and parts in connection therewith. This bar is bent, as shown at m' , so as to overlie the hinge-beam f , and is also provided with a cranked portion m^2 , so that when the chain g^5 is operated to lift the finger-bar f' , the parts m' and m^2 come into contact with the hinge-beam and shoe f^3 , respectively, thereby causing the finger-bar to be lifted from the ground horizontally in a well-known manner.

o , Fig. 2, is the chain which connects the bracket h' to the pole-bracket g' , the said chain being united to the bracket g' by an adjusting-screw o' . Instead of the chain o , a sliding bolt may be employed, as shown in detached view in Fig. 5^a. In this case the bolt is connected to the bracket g' in a similar manner to the chain o , but at its lower end is provided with a head o^2 , upon which rests

the bracket h' through the medium of an extension o^3 , through which the said bolt passes. These arrangements, while allowing the pole to bend under the weight of the hinge-beam and cutter-bar when they are lifted, prevent the bending movement being communicated to the arm or bracket h' , (which would be the case if the pole were connected rigidly to the arm or bracket,) thereby avoiding the risk of straining the bracket and putting the journal i' out of line.

Instead of the screw o' , I sometimes make use of the bell-crank hand-lever p , working over a notched plate p' on the pole-bracket g' , as shown clearly in detached view in Fig. 6.

As shown in Figs. 1 and 2, the crank for driving the knife is formed double or with an additional portion e^* , so as to enable the crank-shaft d to be extended and supported in an additional bearing d^3 , on the crank-shield d^4 . For lubricating the pin of the said crank, I form the crank-pin d^5 with a hole d^6 plugged at both ends, as shown in detached view at Fig. 6^a. This hole communicates with the surface of the crank-pin by one or more holes d^7 , and with the outside of the crank by means of a hole d^8 , a set-screw d^9 being used to seal the hole d^8 when charged with lubricant.

In Figs. 1 and 2, q q are the whiffletree-guides, and q' the slide which works thereon, the said guides being formed as shown, and placed at the sides of the pole g . q^2 is the bolt, and q^3 the loop or eye for connecting the pole g by the draw-bar q^4 to the extension q^5 on the hinge-beam f .

Figs. 7 and 8 are an end and side sectional elevation of the crank end of the connecting-rod e' , it being formed of a U shape, as shown, to receive the bush r . s is the curved spring which bears upon the said bush and against the sides r' of the end of the rod, and s' s^2 the bolt and nut, respectively, by tightening which the spring s will be caused to bear upon the bush, as hereinbefore described, and the wear of the bush taken up.

In Fig. 1 and also in Figs. 9, 10, and 11, which are a plan, rear, and end elevation, respectively, is shown my improved form of rod stop or holder, which comprises the bearing-piece t , hinged at t' to a bracket t^2 attached to the slade or shoe f^3 . To the front end of the piece t is hinged the spring-arm t^3 , the free end of which engages, when locked, beneath a projection t^4 on the bracket t^2 , the other end of the arm t^3 engaging in a recess t^5 in the piece t , as shown clearly in the drawings. In order to raise the piece t to release the connecting-rod e' , the spring-arm t^3 must be disengaged from the recess t^5 and turned into the position shown by the dotted lines in Fig. 10. This movement, by reason of the cam shape of the under edge of the free end of the arm t^3 , will lift the piece t into the position shown also by dotted lines. The piece t can then be further turned on its pivot by lifting the arm t^3 .

u , Fig. 2, is the grease-box, which I arrange on the slade or shoe f^3 above and for the purpose of lubricating the block or knife end e^2 , which forms the connection between the connecting-rod e' and the knife. This arrangement is shown most clearly in Figs. 16 and 17, which represent a sectional plan and sectional elevation, showing the said knife end, grease-box, and adjacent parts.

Fig. 18 is a side elevation, and Fig. 12 a partial section, of my improved track-board, showing the angle-iron v fastened by bolts and nuts v' v^2 , respectively.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The main casting oscillating on an axis parallel with the main axle and at a point or line between the latter and the line of the finger-bar, the spindle supporting the main casting and extending across the machine and geared at both ends to the carriage-wheels, combined with the hinge-beam or coupling-bar hinged at its inner end to such main casting, all substantially as set forth.

2. The main casting, the hinge-beam or coupling-bar pivotally connected to the main casting so that it may swing up and down at its outer end, said main casting being mounted in arms on and projected forward of the main axle and adapted to oscillate thereon, the axis of oscillation coinciding with the axis of the first-motion spindle, said spindle extending across the machine and being geared at both ends to the gear of the carriage-wheels, all substantially as set forth.

3. In a mower, the main frame mounted on a spindle in front of and parallel with the main axle, the hinge-beam pivotally connected to the main frame, and the slotted stay secured to the outer end of the hinge-beam to embrace a block journaled on an arm which supports the spindle.

4. In a mowing-machine, the hinge-beam, the hinge composed of the two bosses k k' , bolted on the hinge-beam and working on a pin l on the finger-bar, said bosses being provided with pins k^2 k^3 and nuts k^4 , the pin k^2 passing through a hole at the front of the hinge-beam, and the pin k^3 through a slot k^5 at the rear, substantially as shown and described.

5. In a mowing-machine, the combination of the hinge-beam, the lock-bar m , having a heel at one end contacting directly with the finger-bar and mounted on the joint-pin l , and provided with a bend m' , adapted to overlap and bear against the hinge-beam, and a lifting-chain connected to the inner end of the lock-bar and passing under a pulley on the hinge-beam and connected to a lifting-lever on the pole, all substantially as shown and described.

6. In a mowing-machine having its main casting adapted to oscillate as described, an adjusting device, as shown and described,

connecting the pole-bracket g' to one of the brackets h' , projecting from the main axle, which support the main casting, combined with the means, as set forth, for adjusting said
5 device, the combination permitting the pole to bend without risk of straining the bracket and putting the journals i out of line.

7. In a mowing-machine, a connecting rod or pitman having its crank end formed in U
10 shape, as shown, combined with a bush r , bolt

s, and a spring bearing on said bush and on the sides r' of the U-shaped end, substantially as shown and described.

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Witnesses:

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A. ST. WURR.