





No. 747,758.

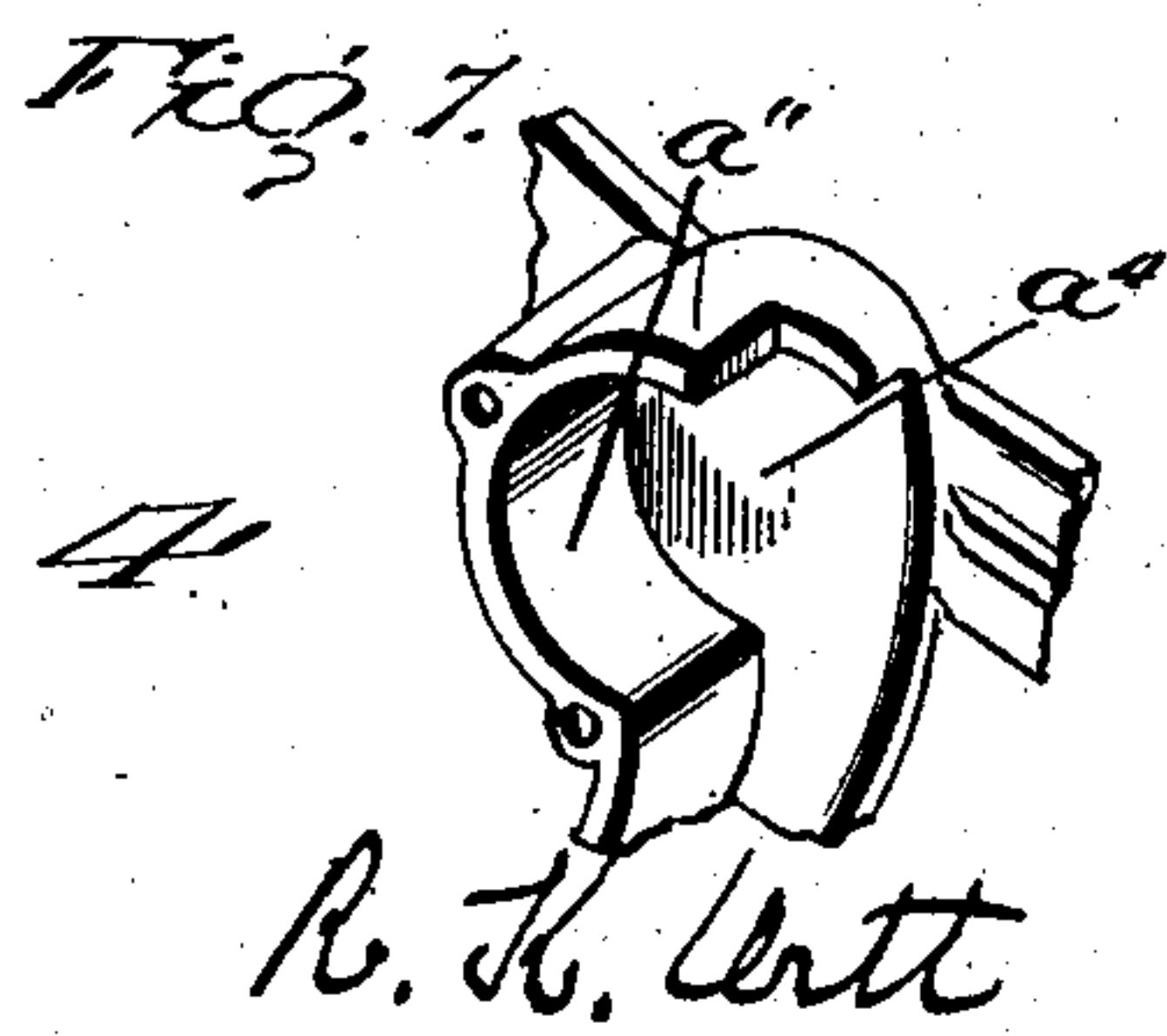
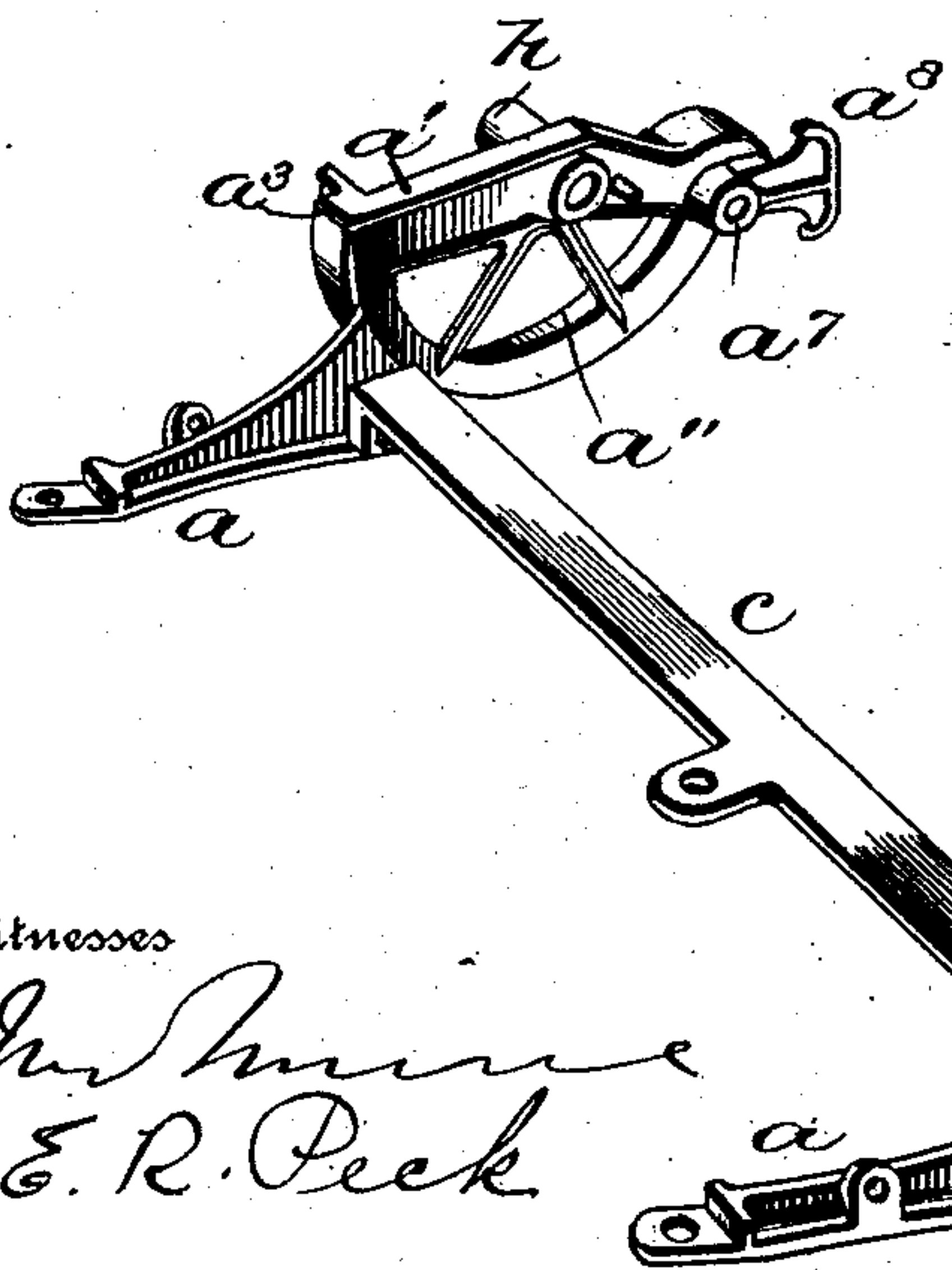
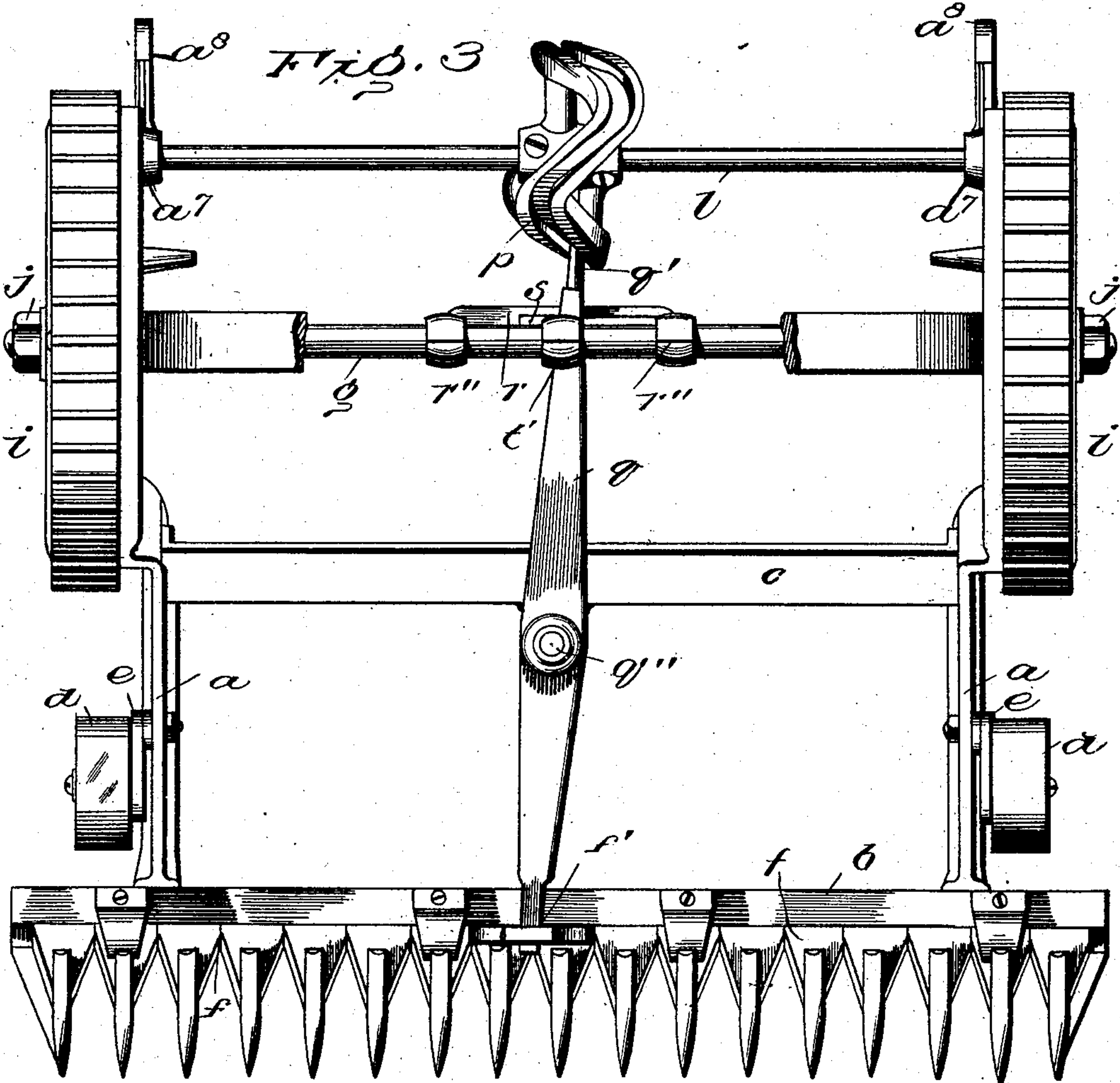
PATENTED DEC. 22, 1903.

R. K. ORTT.  
LAWN MOWER.

APPLICATION FILED JUNE 27, 1903.

NO MODEL.

2 SHEETS—SHEET 2.



Witnesses

*James E. R. Peck*

Inventor

per

*Kuhnt & Peck*  
Attorney



## UNITED STATES PATENT OFFICE.

ROWLEY K. ORTT, OF READING, PENNSYLVANIA.

## LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 747,758, dated December 22, 1903.

Application filed June 27, 1903. Serial No. 163,384. (No model.)

*To all whom it may concern:*

Be it known that I, ROWLEY K. ORTT, a citizen of the United States, residing at Reading, Berks county, Pennsylvania, have invented certain new and useful Improvements in Lawn-Mowers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain improvements in lawn-mowers, and more particularly to that type of lawn-mowers employing a reciprocating knife-bar cutting mechanism; and the objects and nature of the invention will be readily understood by those skilled in the art in the light of the following explanations of the accompanying drawings, which show constructions merely as examples for purposes of illustration from among other forms and arrangements within the spirit and scope of my invention.

The invention consists in certain novel features of construction and in combinations and arrangements of parts, as more fully and particularly set forth and specified hereinafter.

Referring to the accompanying drawings, Figure 1 is a perspective view of the lawn-mower, the handle being partially broken away. Fig. 2 is a side elevation of the lawn-mower, showing the same standing on the rear feet with the handle swung up to a vertical position against the cutting mechanism, portions of the machine being broken away to show hidden parts. Fig. 3 is a top plan view of the machine, the handle not being shown and the handle-yoke being shown partially broken away. Fig. 4 is a detail perspective view, on a reduced scale, of the frame of the machine comprising the side plates and the connecting cross-bar. Fig. 5 is a detail sectional view through one of the ratchet mechanisms between the cam-shaft and a drive-wheel and showing a portion of a side plate and drive-wheel. Fig. 6 is a detail sectional elevation showing a portion of the axle and showing the members attached to the axle to guide the oscillating lever, which is shown in cross-section, a portion of the depending yoke from the axle being shown broken away to disclose the bearing-balls working in the same. Fig. 7 is a detail per-

spective view of the upper rear portion of one of the side frames or plates, showing the casing thereof formed to receive one end pinion of the cam-shaft, the cover for said casing being removed.

In the drawings, *a* represents the forwardly-extending arms of the side frames, at their front ends connected by and rigidly secured to the finger or guard bar *b*. *c* is a cross-bar rigidly secured to and connecting said forwardly-extending arms or plates of the side frames. *d* represents small gage-rollers carried by arms *e*, clamped by pivot-bolts to said portions *a* of the side frames, so that the gage-rollers travel on the ground behind the outer ends of the finger-bars.

*f* is the reciprocating knife-bar, seated in the finger-bar with its knives reciprocating back and forth through slots in the finger. Any suitable means are provided to hold the knife-bar to its seat in the finger-bar.

*g* is the rigid axle of the machine, arranged horizontally and transversely thereof. The ends of this axle are secured in and project outwardly beyond bearing-hubs *h*, formed integral with and projecting horizontally and outwardly from the upper rear portions of the side frames of the machine. *i* represents the two ground and driving wheels of the mower mounted and turning on said hubs and confined thereon by nuts *j* or other suitable means on the ends of the fixed axle. Each driving-wheel is formed with a laterally-extending rim provided with a narrow internal gear *k*, located at the inner portion of the rim, so as to leave the inner face of the rim smooth beyond the gearing.

*l* is the horizontal transverse rotary cam-shaft passing through and journaled in the rear ends of the side frames and at its outer ends having the pinions *m* loosely mounted thereon and meshing with the internal gears of the drive-wheels and provided with pawls *n*, yieldingly held to ratchet-wheels *o*, rigid with the cam-shaft and arranged so that the drive-wheels can rotate loosely on the hubs *h* without rotating the cam-shaft when the mower is moved rearwardly and so that the cam-shaft will be driven by and rotate with the drive-wheels when the same are rotated forwardly. The clutch or pawl-and-ratchet mechanism just described is the same as that



shown in my Patent No. 652,138, issued to me June 19, 1900; but I do not wish to limit my present invention to employment with this pawl-and-ratchet mechanism.

5  $p$  is the grooved cam-wheel, rigidly secured on the cam-shaft and at about the center thereof between the side frames of the machine.

10  $q$  is the oscillating actuating-lever between the cam-wheel and the reciprocating knife-bar. At its upper rear end this lever is provided with the antifriction-roll  $q'$ , confined in the groove of the cam-wheel, and at its lower end the lever is loosely confined in an eye  $f'$  15 of the knife-bar. Between its ends, the actuating-lever is fulcrumed on a stud of the cross-bar  $c$  and is confined on said stud to permit the free oscillation of the lever by a cap and bolt  $q''$ .

20 I preferably form the main or rear portions of the side frames of the machine semicircular and arrange said portions at the inner faces or sides of the drive-wheels and occupying the lower halves of the drive-wheels, so 25 that the upper halves of the drive-wheels are open or exposed. I also prefer, although I do not wish to so limit my invention, to form said portions of the side frames with openings and the drive-wheels with spokes. Each 30 semicircular or main portion of the side frames is formed integral with its forwardly-extending arm or plate  $a$ , and consists of the vertical plate or web  $a'$ , having the curved lower edge concentric with the hub  $h$  and fitting the plain inner edge of the drive-wheel 35 rim, and the semicircular laterally-extending flange  $a''$  concentric with the hub  $h$  and projecting into the rim of the drive-wheel within the circle of the internal gearing there- 40 of and forming a shield or covering for said gearing to prevent dirt and cut grass dropping into said gearing, the lower half of the gearing being thereby inclosed between the rim of the wheel, the flange  $a''$ , and the outer 45 imperforate portion of the vertical wall or web  $a'$  of the main side frame. The forward or front end of the curved flange  $a''$  terminates in a forwardly-projecting horizontal wall or flange  $a^3$ , which closes and covers the 50 front upper end of said space between the wheel rim and flange  $a''$ . The rear end of the flange  $a''$  terminates in and merges into an inwardly-deflected offset or continuation of said flange, forming a semicircular casing 55 or wall  $a^4$ , forming a space inclosing the pinion  $m$  between said flange, the rim of the drive-wheel, the imperforate portion of the web  $a'$ , and a detachable cover-plate  $a^5$ , arranged at the outer end of the pinion and fitting the outer edge of the flange and remov- 60 ably secured thereto by the screws  $a^6$  or other suitable means. The top portion of the flange or wall  $a^4$  closes the upper rear end of the space between the wheel rim and flange  $a''$  6; and covers the top portion of the pinion from grass and dirt. The pinions  $m$  are readily accessible by merely removing the drive-

wheels and the cover-plates  $a^5$ , whereupon the pinions can be lifted from the ends of the cam-shaft, exposing the pawls and the ratchet- 70 plates. As the upper halves of the internal gears of the drive-wheels are exposed, said gears can be readily cleaned and oiled, if necessary. The side frames are exceedingly strong and durable and inclose the working 75 parts adjacent thereto and yet are light and economical in the quantity of metal employed in the manufacture thereof.

Each plate or forwardly-extending arm  $a$  of a side frame has an offset connection with 80 the inner face of the rear portion of the main or semicircular part of the side frame.

At the rear end of each side frame I preferably form an inwardly-projecting lateral boss  $a^7$ , through which the cam-shaft passes, 85 and the side frames are formed integral with rearwardly-projecting feet or buffers  $a^8$ , preferably merging into said bosses and having enlarged usually curved outer edges preferably elongated vertically about as shown and 90 arranged a distance in rear of the wheel-rims and of the side frames, so that when the mower is in use said buffers will receive the blow or impact should the mower engage any object when drawn back, and hence shield 95 the wheels and other portions of the machine from injury. These buffers also form feet on which the machine can rest in the crate when packed for shipment, and hence take the weight from the wheels, and also when 100 the machine is not in use it can be set up on end, resting on said feet, and take up much less room than when resting down in its normal horizontal position, and at the same time the feet will take the weight of the machine 105 from the wheels and avoid injury to the cam-wheel by striking or resting on the ground or floor.

As the mower is moved forward the cam-wheel is rotated forwardly in the same direc- 110 tion as the drive-wheels and the actuating-lever is oscillated by the rotation of the cam-wheel to reciprocate the knife-bar. As the lever extends forwardly from the front portion of the cam-wheel there is a tendency on 115 the part of the cam-wheel to depress the rear end of the lever, and hence to elevate the front end thereof, with a consequent tendency to raise the knives from proper shearing or cutting relation with the fingers of the finger or 120 guard bar. I have provided means to counteract this tendency to elevate the knife-bar from its most effective position with relation to the cutting portions of the finger-bar. Various means can be employed for this purpose, 125 but as at present advised by experiment and practical use I prefer to employ a bearing-surface arranged transversely beneath the rear end portion of the oscillating lever to stop and prevent downward movement of the 130 rear end of said lever and yet permit the free oscillation of the lever. I employ the fixed axle  $g$  as a convenient support for this bearing-surface and hang the bearing-surface



from the axle. The bearing-surface can be formed by the elongated horizontal portion  $r$  of a yoke having upwardly-extending ends or hangers  $r'$ , the upper ends of which form separable eyes  $r''$ , embracing the axle and clipped or clamped thereon and rigidly secured thereto by clamping-screws  $r^3$ , passing through the two sections of each divided eye forming the clip ends of the yoke. The horizontal portion  $r$  of the yoke is arranged a distance below and parallel with the central portion of the axle and is sufficiently long to permit the free full stroke or vibration of the actuating-lever between the axle and horizontal portion  $r$  of the yoke. The upper face of the yoke is preferably formed flat, and the actuating-lever can travel back and forth on said surface to prevent downward movement of the rear end of the lever; but I prefer in order to reduce friction to a minimum to form the elongated seats or raceways  $r^4$  in the top face of the portion  $r$  of the yoke and locate antifriction-balls  $r^5$  in said raceways and secure an elongated bearing-plate  $s$  rigidly to and transversely of the under face of the actuating-lever to bear and travel on said balls and confine them in their raceways. If desired, I can provide means to prevent the rear end of the actuating-lever by any accident moving upwardly from the portion  $r$  of the yoke a sufficient distance to permit escape of said balls. For instance, I show a guard plate or member  $t$ , arranged above the rear end of the lever and transversely thereof and carried by and rigid with a clip  $t'$ , extending up to and clamped on the central portion of the axle by a clamping-screw  $t''$ . The rear end of the lever will thus vibrate between the lower edge of said transversely-arranged stop or guard  $t$  and the upper face of the transversely-arranged bearing-surface of the yoke. The guard  $t$  and the yoke can be easily removed and adjusted in case of necessity and are exceedingly effective and durable and can be manufactured at slight expense.

Any suitable means can be provided to propel the mower, and I show a handle  $u$ , having a yoke  $v$  at its lower end mounted on the axle, for this purpose, but do not wish to limit my invention to the employment of such particular means for propelling the machine.

The handle of the machine is free to swing to a position approximately parallel with the forwardly-extending arms of the side plates and to or against the cutting mechanism. This is a feature of advantage where the rear feet  $a^8$  are employed, as the machine can be placed in the upright position shown in Fig. 2 and resting on and upheld by said feet with the handle extending upwardly and folded against the cutting mechanism. The machine can thus be placed in a corner or against a wall and occupy small space, and the handle will be upheld in a vertical position out of the way, and thereby avoiding the

danger of injury thereto, which would be probable should the handle rest on the ground or floor or extend horizontally from the machine. This arrangement also permits shipping of the machine crated with the parts in the position shown in Fig. 2 and with the handle operatively attached to the machine.

It is evident that various changes and modifications might be resorted to in the forms, constructions, and arrangements of the parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit my invention to the exact construction shown.

Having thus described my invention, what I claim is—

1. A lawn-mower comprising a reciprocating knife-bar, a main axle, a cam-wheel and its driving means, an oscillating knife-bar-actuating lever, and a stop or bearing device cooperating with the lever and limiting the downward movement thereof and attached to and carried by the axle.

2. A lawn-mower comprising a reciprocating knife-bar, a rotary cam-wheel and its driving means, an axle and drive-wheels, an oscillating knife-bar-actuating lever between the cam-wheel and knife-bar, and a fixed bearing or stop device secured to said axle and acting on said lever throughout its full stroke to hold the knife-bar down to its seat.

3. A lawn-mower comprising a reciprocating knife-bar, a rotary grooved cam-wheel and its driving means, driving-wheels and an axle, an oscillating knife-bar-actuating lever having its rear end confined to and oscillated by said cam-wheel, and an elongated fixed stop member arranged transversely beneath the rear portion of said lever and hung from said axle and cooperating therewith to limit the downward movement thereof.

4. A lawn-mower comprising a reciprocating knife-bar, a frame, a fixed axle, driving-wheels, a rotary cam-wheel driven from said wheels, an oscillating knife-bar-actuating lever engaged and vibrated by said cam-wheel, and a yoke carried by said axle and having a transverse portion arranged below said lever and cooperating therewith to limit the vertical movement thereof.

5. A lawn-mower comprising a reciprocating knife-bar, a frame, a rotary cam-wheel, means for driving the same, an oscillating knife-bar-actuating lever vibrated by said cam-wheel, and a depending yoke provided with end clamps and having an elongated portion arranged transversely of said lever and cooperating therewith throughout its full stroke to limit the vertical movement thereof.

6. A lawn-mower comprising a reciprocating knife-bar, a frame, a rotary cam-wheel and its driving means, an oscillating knife-bar-actuating lever vibrated by said cam-wheel, a yoke having an elongated portion arranged transversely of said lever, said lever provided with a transversely-arranged bear-



ing-surface, and antifriction-balls interposed between said surface and portion of the yoke.

7. A lawn-mower comprising a reciprocating knife-bar, a frame having a fixed axle, 5 drive-wheels, a rotary cam-wheel driven from said drive-wheels, an oscillating knife-bar-actuating lever vibrated by said cam-wheel, a yoke having its ends clipped to said axle and having an elongated portion arranged 10 transversely beneath the rear portion of said lever and cooperating therewith to limit the downward movement thereof.

8. A lawn-mower comprising a reciprocating knife-bar, a frame, a rotary cam-wheel 15 and its driving means, an oscillating knife-bar-actuating lever vibrated by said cam-wheel, a yoke having a portion arranged transversely beneath said lever and formed with ball-raceways in its upper face, a por- 20 tion of the lever traveling on and upheld by said balls, and means to hold the lever to said balls.

9. A lawn-mower comprising a reciprocating knife-bar, an axle, drive-wheels, a frame, 25 a rotary cam-wheel and its driving means, an oscillating knife-bar-actuating lever vibrated by said cam-wheel, means limiting the downward movement of the rear portion of said lever, and an elongated guard secured to said 30 axle and arranged transversely of said lever and limiting the upward movement of the rear end thereof.

10. A lawn-mower comprising a reciprocating knife-bar, a frame, a rotary cam-wheel and 35 its driving means, an oscillating knife-bar-actuating lever reciprocating the knife-bar and vibrated by said cam-wheel, a normally fixed yoke having a portion extending transversely beneath and limiting the downward move- 40 ment of the rear end of said lever, means adjustably securing said yoke, and a normally fixed guard-plate arranged transversely of and above said lever and limiting the upward movement of the rear end of said lever, and 45 provided with adjustable securing means.

11. In combination, a frame having a fixed cross member, drive-wheels, a rotary cam-shaft and its cam, a cutting mechanism, an oscillating cutting-mechanism-operating 50 lever actuated by said cam, a stop member arranged transversely of said lever and cooperating therewith to limit the vertical move-

ment thereof, and adjustable means securing said stop member to said cross member.

12. In combination, in a lawn-mower, a for- 55 wardly-extending frame, drive-wheels, cutting mechanism at the front of the frame, actuating mechanism therefor, said frame provided with rearwardly-extending feet in rear of the mower, and a swinging handle arranged 60 to swing to a position approximately parallel with said frame, whereby the mower can rest in an upright position on and upheld by said feet with the handle extending vertically.

13. A lawn-mower comprising cutting 65 mechanism, actuating means therefor, side frames having semicircular rear portions, internally-g geared drive-wheels mounted on said rear portions of the side frames and driving said actuating means, said side frames hav- 70 ing the lateral semicircular flanges covering the lower portions of the internal gearing of said wheels.

14. In a lawn-mower the side frames, each formed in one piece and having the semicir- 75 cular rear portion with the outwardly-projecting hub, the lower curved edge concentric with said hub, the lateral curved flange concentric with said hub and at its front end terminating in the forwardly-projecting 80 flange and at its rear terminating in the offset curved pinion pocket or casing having a removable cover-plate, in combination with the cutting mechanism, cam-shaft and cam, and end pinions, the drive-wheels, and oscil- 85 lating lever.

15. In a lawn-mower in combination, a frame, drive-wheels, a rotary cam actuated by the drive-wheels, cutting mechanism, an oscillating lever actuating the same and op- 90 erated by the cam, a transversely-arranged stop member clipped to a transverse portion of the frame and cooperating with said lever to limit the vertical movement thereof, and an adjustable guard clipped to said transverse 95 portion of the frame and cooperating with said lever to hold the same in proper relation with respect to said stop member.

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

ROWLEY K. ORTT.

Witnesses:

JOHN K. HIESTER,  
WEL. M. LEINBACH.