(No Model.) 3 Sheets—Sheet 1.

W. L. FRISBIE.
LAWN MOWER.

No. 483,685. Patented Oct. 4, 1892.

Fig. 1.

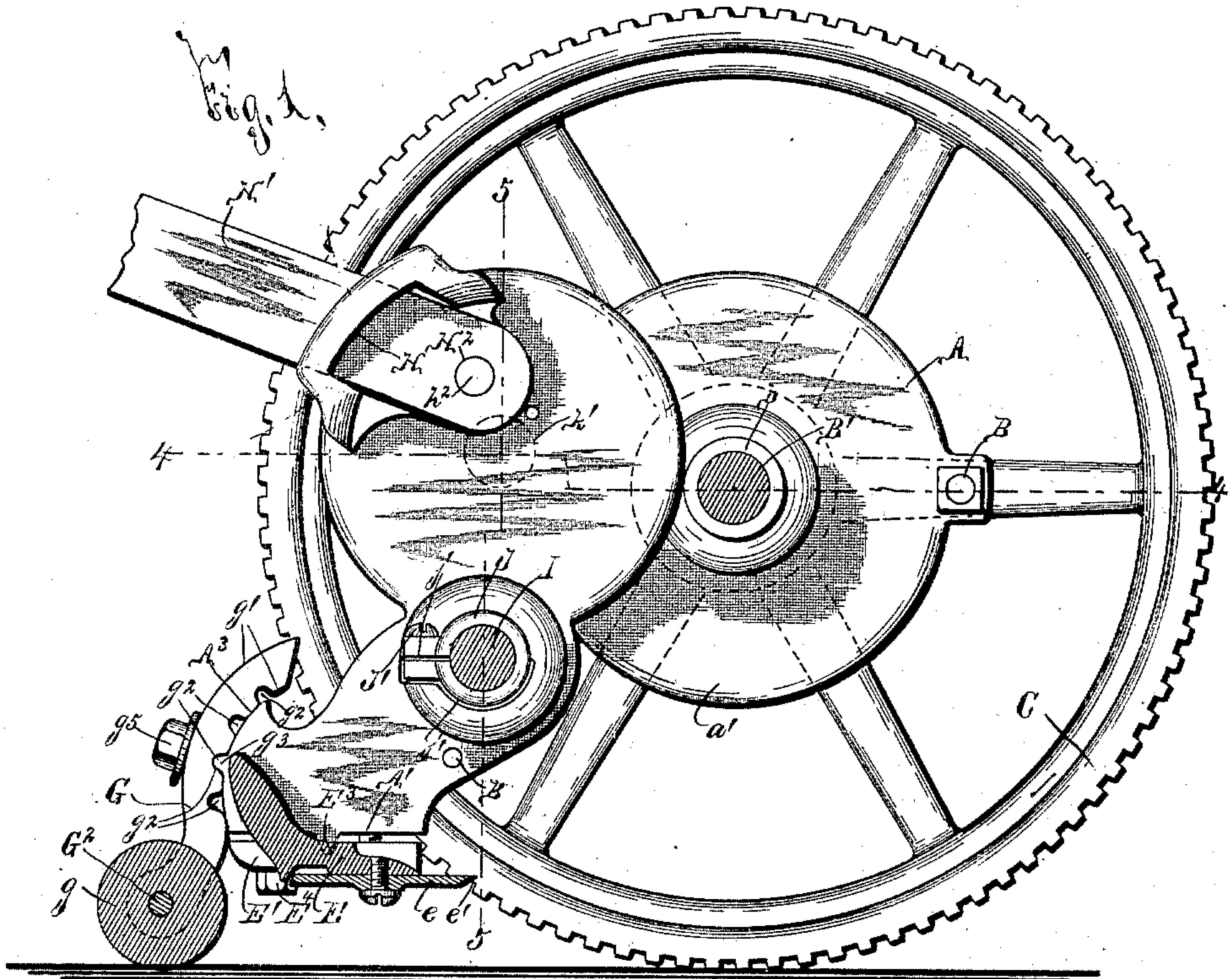

Fig. 2.

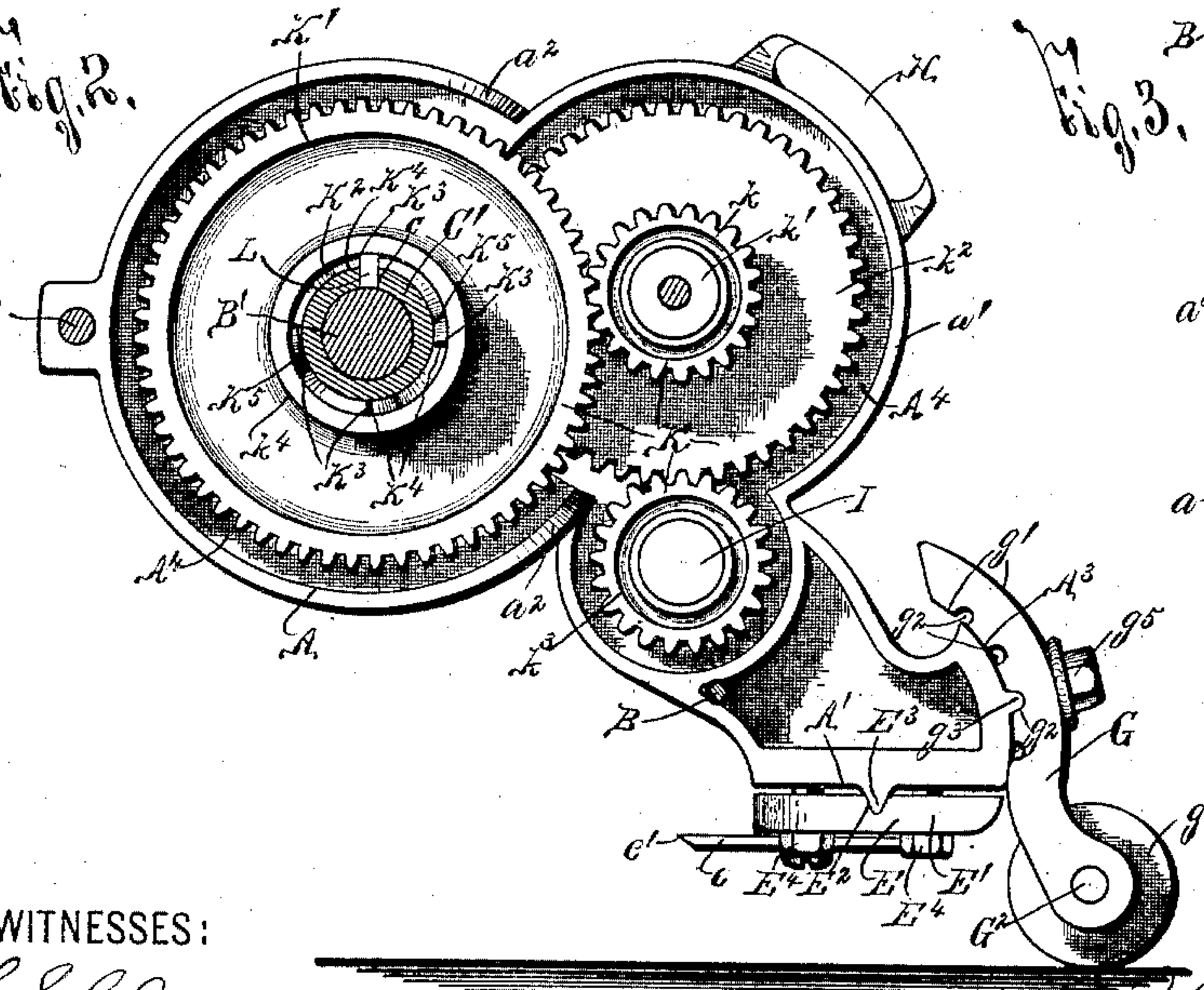

Fig. 3.

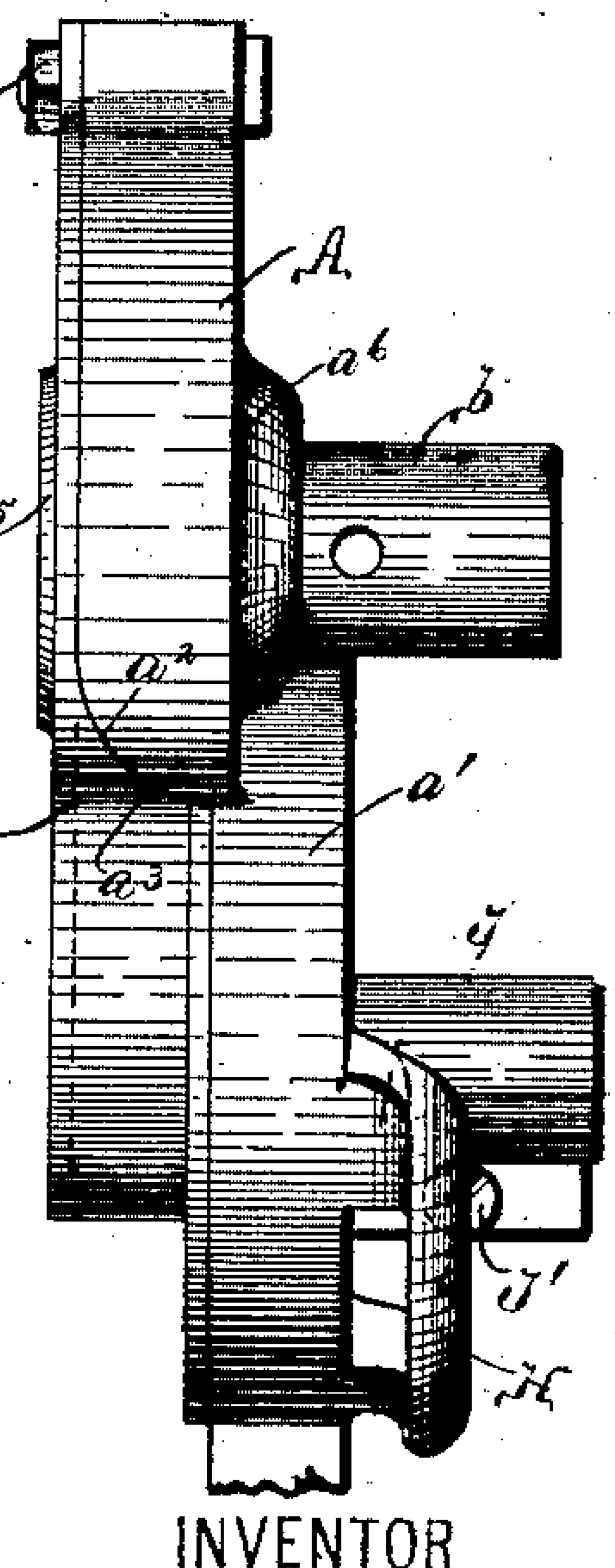

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Fig. 4.

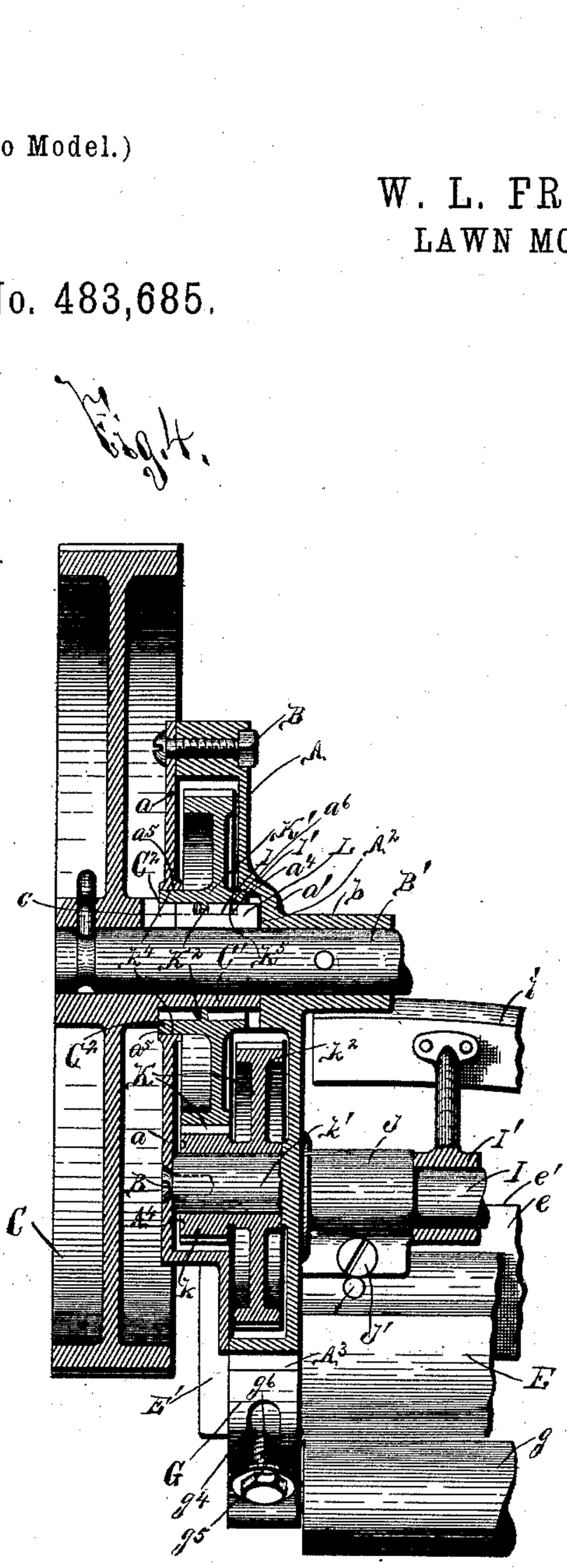

Fig. 5.

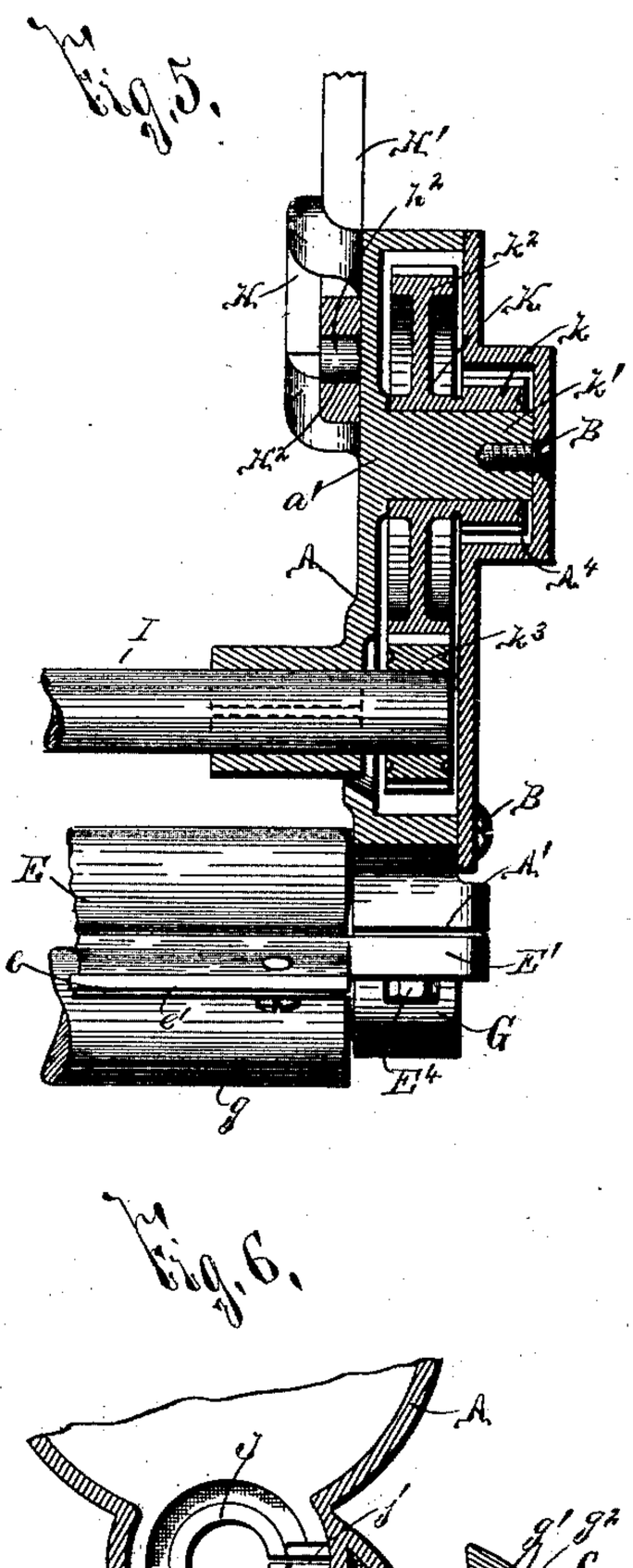

Fig. 6.

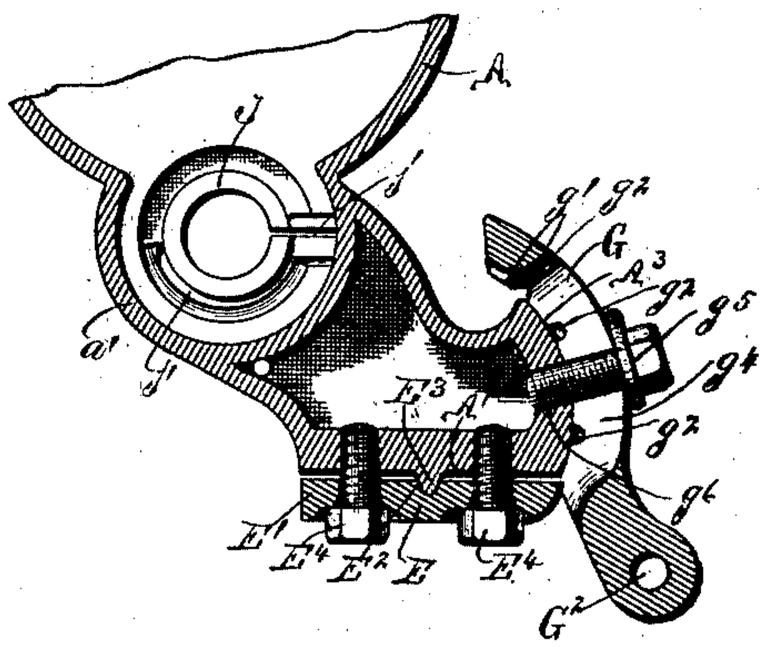

Fig. 7.

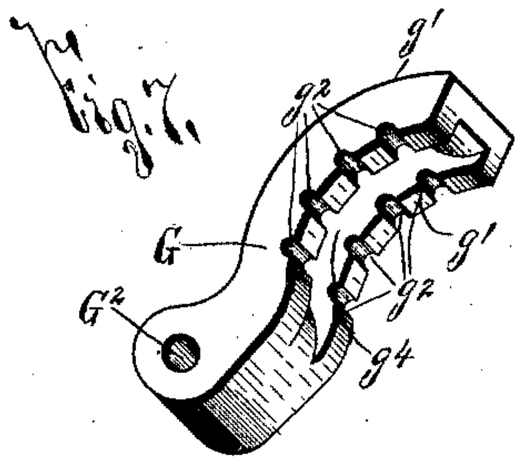

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Fig. 8.

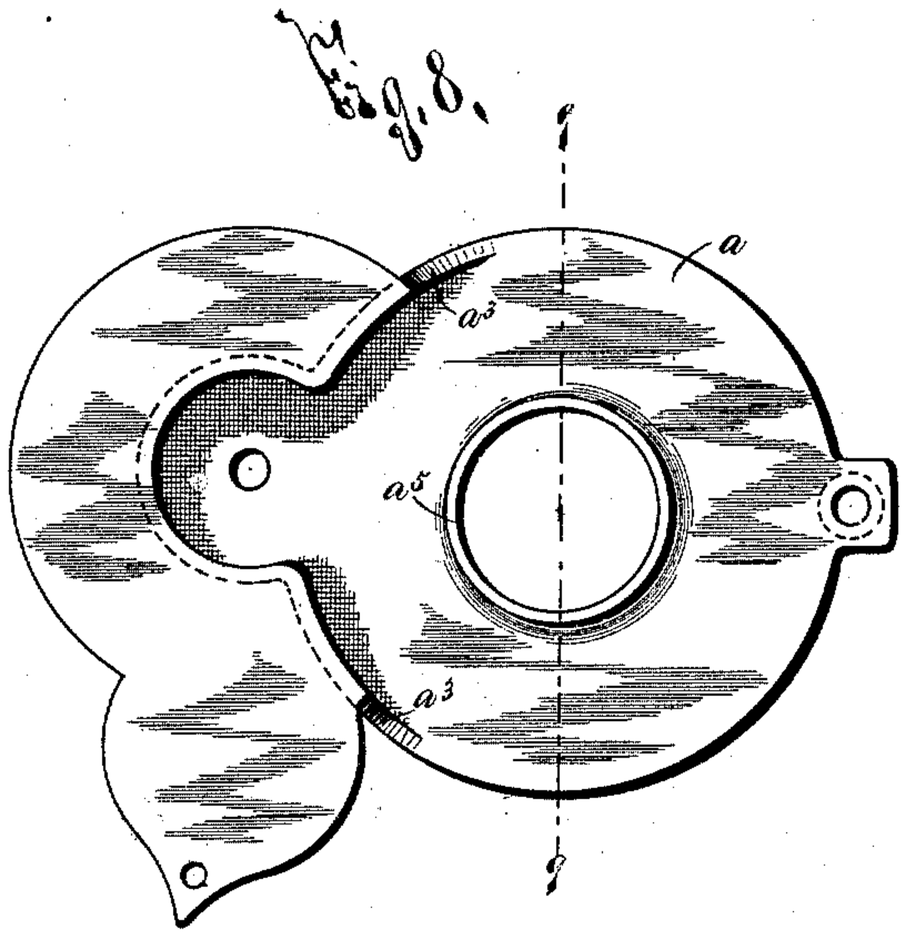


Fig. 9.

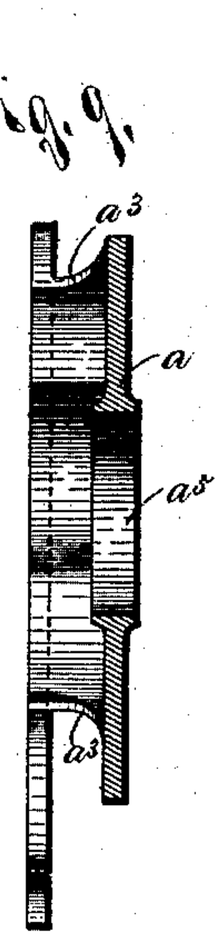


Fig. 10.

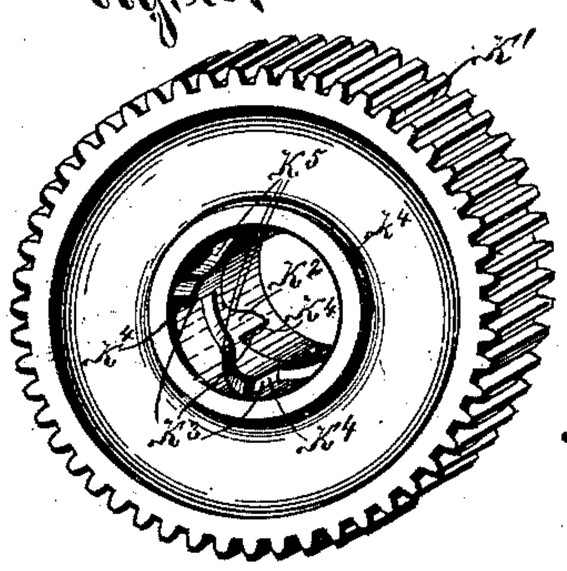


Fig. 11.

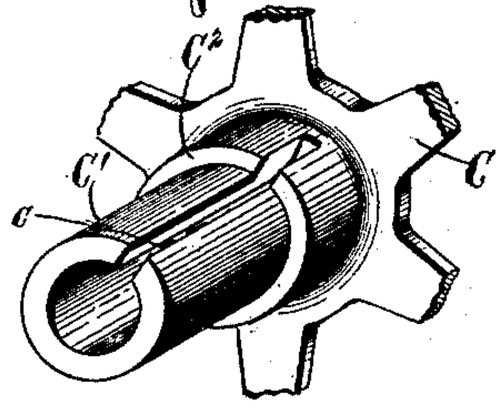


Fig. 12.

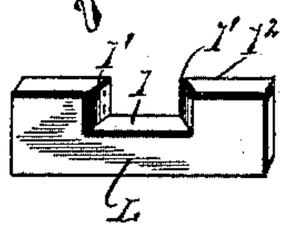


Fig. 13.

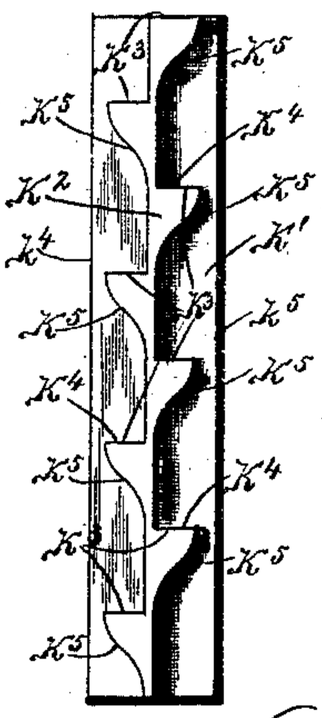
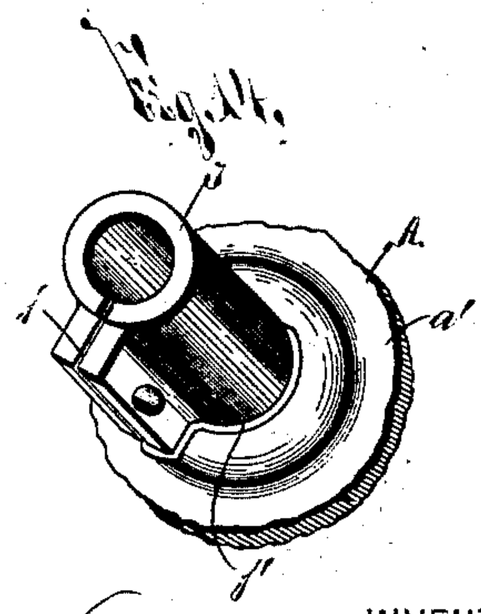


Fig. 14.



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UNITED STATES PATENT OFFICE.

WILLIAM L. FRISBIE, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF TO WILLARD E. LAPE, OF SAME PLACE.

LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 483,685, dated October 4, 1892.

Application filed July 23, 1891. Serial No. 400,505. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. FRISBIE, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Lawn-Mowers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in lawn-mowers, and has for its object the production of a simple and effective device which is strong, durable, efficient, and highly economical in manufacture.

To this end it consists, essentially, in a frame or casing for supporting one of the traction-wheels and one extremity of the cutting-knives of the mower and for incasing the gearing between said traction-wheel and knives, and in the detail construction and arrangement of the parts, all as hereinafter more particularly described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 is a side elevation of a portion of a lawn-mower, illustrating a traction-wheel, the frame for incasing the gearing driven by said wheel, a portion of the handle, the stationary cutting-knife, and the adjustable rear roller. Fig. 2 is an elevation of the inner face of one section of said frame, the gears incased thereby, the stationary cutting-knife, and the adjustable rear roller. Fig. 3 is a top plan view of the detached frame or casing. Fig. 4 is a horizontal sectional view taken on line 4 4, Fig. 1, representing, in addition to the parts shown in Fig. 1, a portion of the revolving spirally-arranged cutting-knives. Fig. 5 is a vertical sectional view taken on line 5 5, Fig. 1. Fig. 6 is a detached detail view representing in elevation the inner end of the adjustable journal-bearing for the rotary knife-shaft and the adjustable supports for the stationary knife and rear roller of the machine. Fig. 7 is an isometric perspective of the adjustable support for the rear roller. Fig. 8 is an inner view of the outer section of the casing. Fig. 9 is a vertical sectional view taken on line 9 9, Fig. 8. Figs. 10 and 11 are respectively isometric perspectives of the ratchet-wheel and the traction-wheel hub upon which said ratchet-wheel is journaled. Fig. 12 is an isometric perspective of the ratchet-dog. Fig. 13 is a development of the inner periphery of the ratchet-pinion shown at Fig. 10, and Fig. 14 is an isometric perspective of the adjustable journal-box for the rotary knife-shaft.

A represents one of the two similar frames or casings for supporting one of the traction-wheels C, an extremity of the adjustable support E for the stationary knife-blade *e*, a support G for the rear roller *g*, an extremity of the shaft I for the rotary spiral cutting-knife *i*, and for incasing the gearing K between the traction-wheel and the rotary knife.

As best seen at Figs. 3 and 4, the frame or casing A consists of the opposite sections $a\,a'$, which are secured together by suitable clamps B, and are formed at their adjacent edges with corresponding projections and depressions a^2 and a^3 for enabling them to be more readily assembled together in their correct relative position.

The traction-wheel C is of any desirable form, size, and construction, and is mounted on the axle B′, journaled at *b* in the frame A. Provided on the traction-wheel C is an inwardly-extending hub C′, upon which is mounted the ratchet-gear K′, interposed between an annular shoulder C^2 on said hub and a shoulder a^4 on the frame-section a' and adapted to be locked to the traction-wheel when the mower is moved forward, and by means of connected gearing transmit motion to the shaft I for the movable cutting-knife *i*. This connected gearing consists of a small pinion *k*, mounted on a spindle *k′* and rigidly secured to a larger gear k^2, which meshes with a pinion k^3 upon the shaft I.

As best seen at Figs. 1, 2, 4, and 8, the frame A coincides in form to the arrangement of the gears K′, *k*, k^2, and k^3, and its inner chamber is formed with recesses A^4 for receiving the respective gears, thus forming the frame as compact as possible and enabling each gear to be readily assembled in its proper position.

The inner periphery of the ratchet-gear K′, as best seen at Figs. 10 and 13, is formed with a projecting rib K^2, having alternately-ar-

ranged ratchet-teeth K^3 on its opposite edges. A dog L is rectilinearly movable in a recess or slot *c*, formed in the projecting hub C′ of the traction-wheel C, and is formed at its central portion with a recess *l*, inclining engaging shoulders *l′*, and a front locking-face l^2. As the traction-wheel moves forward the front engaging face l^2 of the dog L engages one of the front locking-faces K^4 of the ratchet-teeth K^3 and locks the ratchet-wheel K′ to the traction-wheel C. On the contrary, when the traction-wheel moves backward the inclined faces K^5 of the teeth K^3 bear against the engaging faces *l′* of the dog L and reciprocate said dog within the slot *c*. To permit this reciprocal movement when a narrow ratchet-wheel and frame are used, the slot *c* extends beyond the outer face of the outer section *a* of the frame A, and the inner section *a′* of said frame is formed with a depression or socket A^2, as best seen at Fig. 4, thus permitting the dog to be formed substantially as wide as said gear. As the internal bearing of the ratchet-gear upon its journal C′, owing to the presence of the ratchet-teeth K^3, is quite narrow at intervals and would become unduly worn in practical use, the outer periphery of the outer extremity of the hubs of the gear K′ are turned off and thereby formed with outer peripheral bearing-faces k^4 and k^5, which are journaled in the bearings a^5 and a^6 in the opposite sections *a* and *a′*, thus preventing said gear from rocking and from undue wear on its inner periphery, as would be the case were no outer journal-bearing provided therefor.

In order to form for the shaft I a firm and particularly-effective bearing capable of adjustment for taking up wear, the projecting box or journal J, which is formed on the inner frame-section *a′* for supporting one extremity of said shaft, is split at *j*, and its lower division is separated at its base from the adjacent portion of said section by a slot *j′*, extending through the frame wall, carrying said box. This separation may be effected either during or after the formation of the section *a′* by coring or by a suitable cutting-tool. The upper journal-box section is formed integral with said frame-wall at its base and is formed integral at one of its longitudinal edges with the lower journal-box division. A clamp J′, which may consist of a bolt and nut passed through the sections of the box J, draws said sections together and forms a tight bearing for the shaft I throughout the whole length of the box J. It is therefore evident that the upper journal-box section formed integral with the frame-wall carrying the same provides a strong and firm support against the upward tendency of the shaft I when my lawn-mower is in use, and that as the shaft or the upper box-section becomes worn the clamp J′ may be operated to draw the lower journal-box section against the upper section and take up the wear. This peculiar construction of split box forms an essential part of my invention, as thereby I produce a very cheap, simple, and effective journal-box, which forms a firm bearing throughout its whole length for the shaft and permits wear to be readily taken up by adjusting the clamp J′. Between these boxes J′ is journaled the hub I′ of the movable spiral knife *i*, a portion of which is shown at Fig. 4; but as it may be of any desirable form, size, and construction and forms no essential part of my invention, it is unnecessary to further illustrate or describe the same.

The ends E′ of the movable support E for the stationary knife-blade project beyond said blade and are formed with a recess E^2, adapted to receive a tongue E^3, provided on the lower bearing-face A′ of the frame A. Clamping-bolts E^4 on opposite sides of the tongue E^3 readily adjust the support E to secure the desired elevation of the cutting-point *e′* of the blade *e*.

The adjustable support G for the rear roller *g* is mounted on the transverse face A^3 at the rear edge of the frame, curving upwardly from the lower face A′, upon which the knife-support E is mounted. The upper extremity of this support G is formed with a curved bearing at its front edge, a series of transverse recesses or grooves g^2 for receiving a rib or tongue g^3 on the curved face A^3, and a vertical or longitudinal slot g^4, extending from front to back through the upper extremity of the support G for receiving the projecting end of a clamping-bolt g^5, having its head adapted to bear against the face *g′* of the support G, and its shank to engage a screw-threaded aperture g^6 in the curved face A^3 of the frame A. The rear roller *g* is journaled at G^2, and when desired to adjust the same vertically the clamp g^5 is loosened and the proper recess g^2 then registered with the rib g^3, whereupon the clamp is again tightened. This means for adjusting the rear roller is extremely durable, simple, effective, and easily operated.

The handle H′ is suitably secured to the frame A in any desired manner, as by means of a loop H, for receiving the end of the handle and a projection h^2 for engaging an aperture H^2 in the handle.

The operation and construction of my improved frame will be readily perceived from the foregoing description and upon reference to the drawings, and it will be observed that the separate sections of the frame A are readily cast and assembled with a minimum degree of fitting, the ratchet-wheel prevented from rocking and undue wear by the outer peripheral journal-bearing formed on its hub, the shaft for the movable spiral cutting-knife firmly and effectively journaled in an adjustable box formed integral with one of the sections of the frame, the stationary knife and rear roller adjustably mounted on said frame, and the handle readily and economically secured to a loop formed integral with one of the sections of the frame.

It is evident that the detail construction and arrangement of my invention may be

somewhat varied from that shown and described in the drawings, and that the above-described construction of journal-box may be utilized in other devices.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a ratchet-gear having locking-faces K^4 and inclined faces K^5 on its inner periphery, a journal for the gear provided with a longitudinal slot, a reciprocally-moving dog for locking the gear and journal together, movable longitudinally in said slot and formed with the locking-face l^2, arranged at its longitudinal edge and adapted to project beyond said longitudinal slot for engaging said faces K^4, and with transversely-extending inclined faces l', formed by a cut-out at the center of said dog and adapted, also, to project beyond said longitudinal slot for engaging the said faces K^5, and a frame having a recess for permitting movement of said dog, substantially as specified.

2. The combination of a ratchet-gear having a hub provided with an outer peripheral bearing face k^4 and a projecting rib on its inner periphery formed with locking-faces, a journal for the gear having a lengthwise slot, a reciprocally-moving dog mounted in the slot in the journal for locking the gear and journal together and formed with a locking-face projecting from said slot for engaging the locking-faces of said rib, and a frame having a journal-bearing a^5 for the outer peripheral face k^4 on the hub of said gear for preventing wear of said rib, substantially as set forth.

3. The combination of a ratchet-gear having oppositely-arranged hubs formed with the peripheral bearing-faces k^4 k^5, a journal for the gear, a locking-dog for locking the gear and journal together, and a frame consisting of separable sections having journal-bearings a^5 a^6 for said bearing-faces k^4 k^5, substantially as described.

4. The combination of a ratchet-gear having oppositely-arranged hubs formed with the peripheral bearing-faces k^4 k^5, a journal for the gear, a reciprocally-moving dog for locking the gear and journal together, and a frame having journal-bearings a^5 a^6 for the bearing-faces k^4 k^5 on the hub of the gear and having a recess for permitting movement of the ratchet-dog, substantially as described.

5. The combination of a traction-wheel having a projecting hub formed with a slot, an axle journaled in the hub, a gear mounted on said hub, a dog for locking the gear to the hub, and a frame for incasing said gear formed with a journal-bearing for the gear and a bearing for said axle, substantially as set forth.

6. The combination of a traction-wheel having a projecting hub formed with a slot, an axle journaled in the hub, a gear mounted on said hub, a dog for locking the gear to the hub, a frame consisting of the section a, having the journal-bearing a^5, the sections a', having the journal-bearing a^6 and the recess a^2, and clamps for securing said frame-sections together, substantially as described.

7. In a lawn-mower, the combination of a frame having its rear edge formed with a transverse curved face A^2, provided with ribs g^3, the rear-roller support G, having a curved front face at the upper extremity g', formed with grooves g^2 for receiving the ribs g^3 and having a slot extending through said upper extremity from front to back, and the clamp g^5, substantially as described.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 6th day of July, 1891.

WILLIAM L. FRISBIE.

Witnesses:
CLARK H. NORTON,
L. M. BAXTER.