

(No Model.)

2 Sheets—Sheet 1.

F. M. WATERS.
LAWN MOWING MACHINE.

No. 333,181.

Patented Dec. 29, 1885.

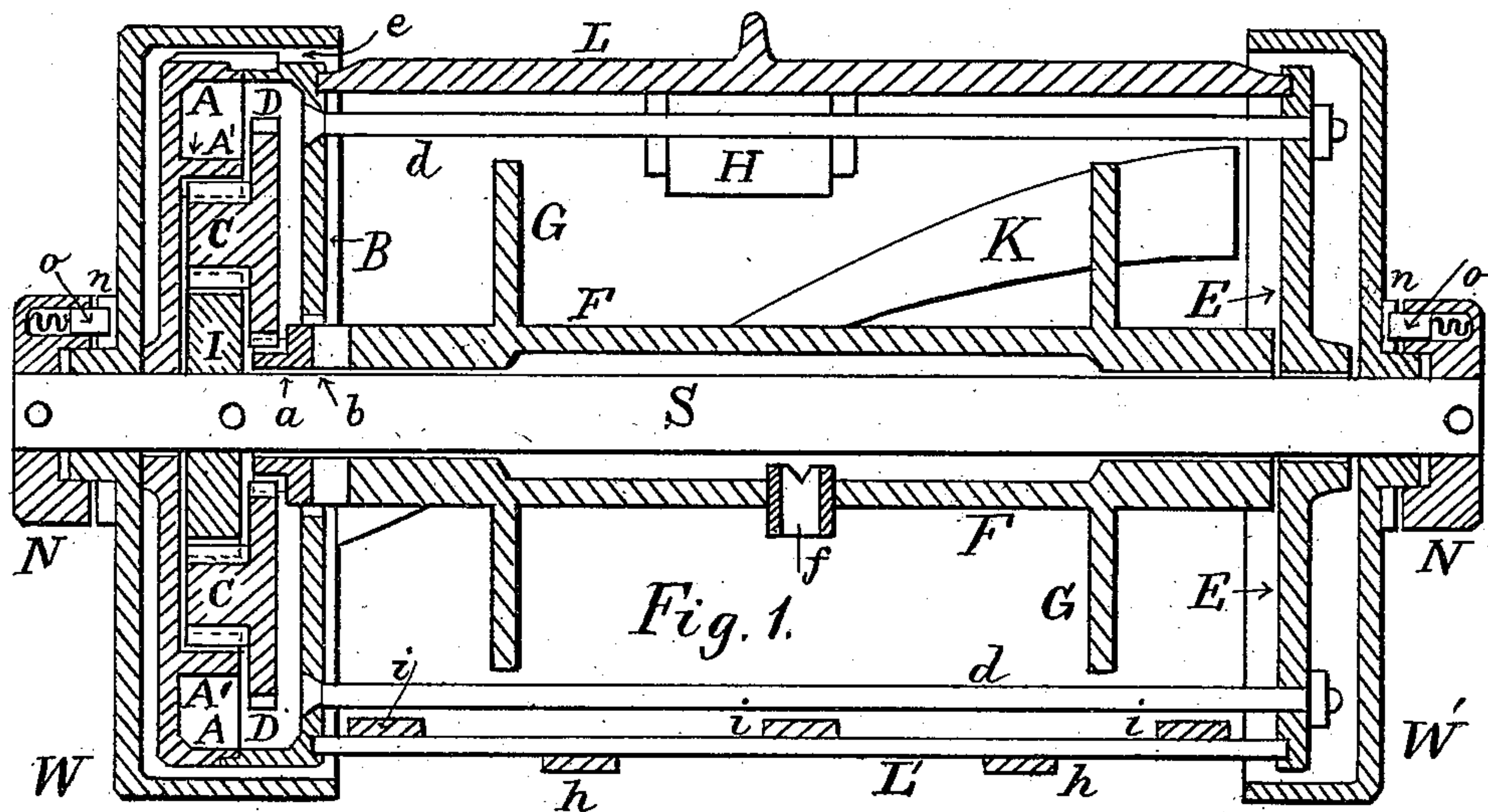


Fig. 4

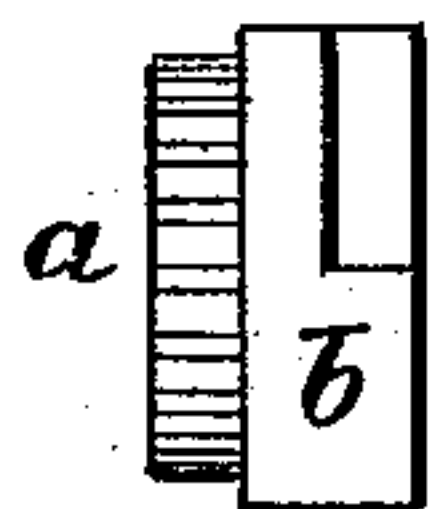
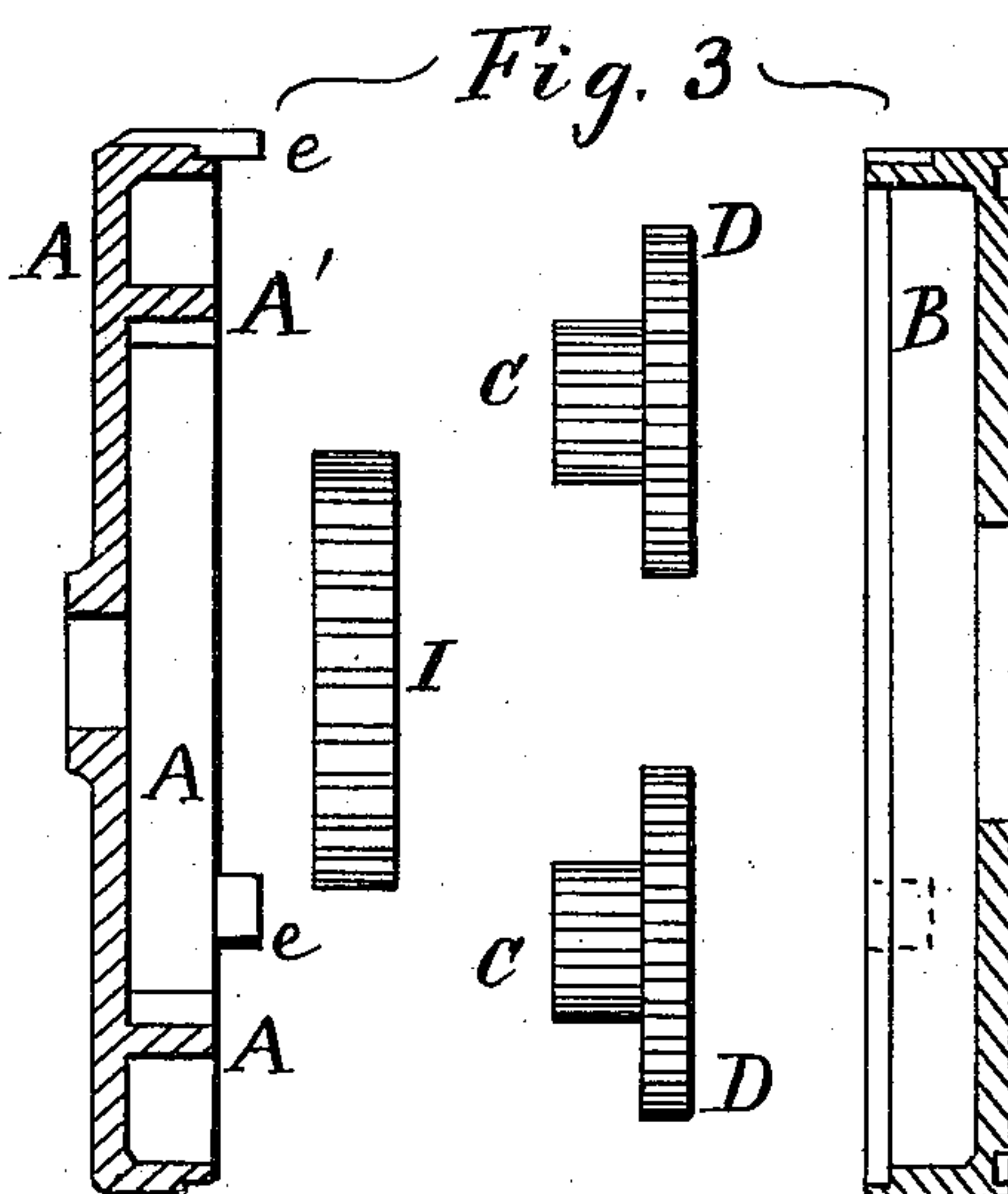
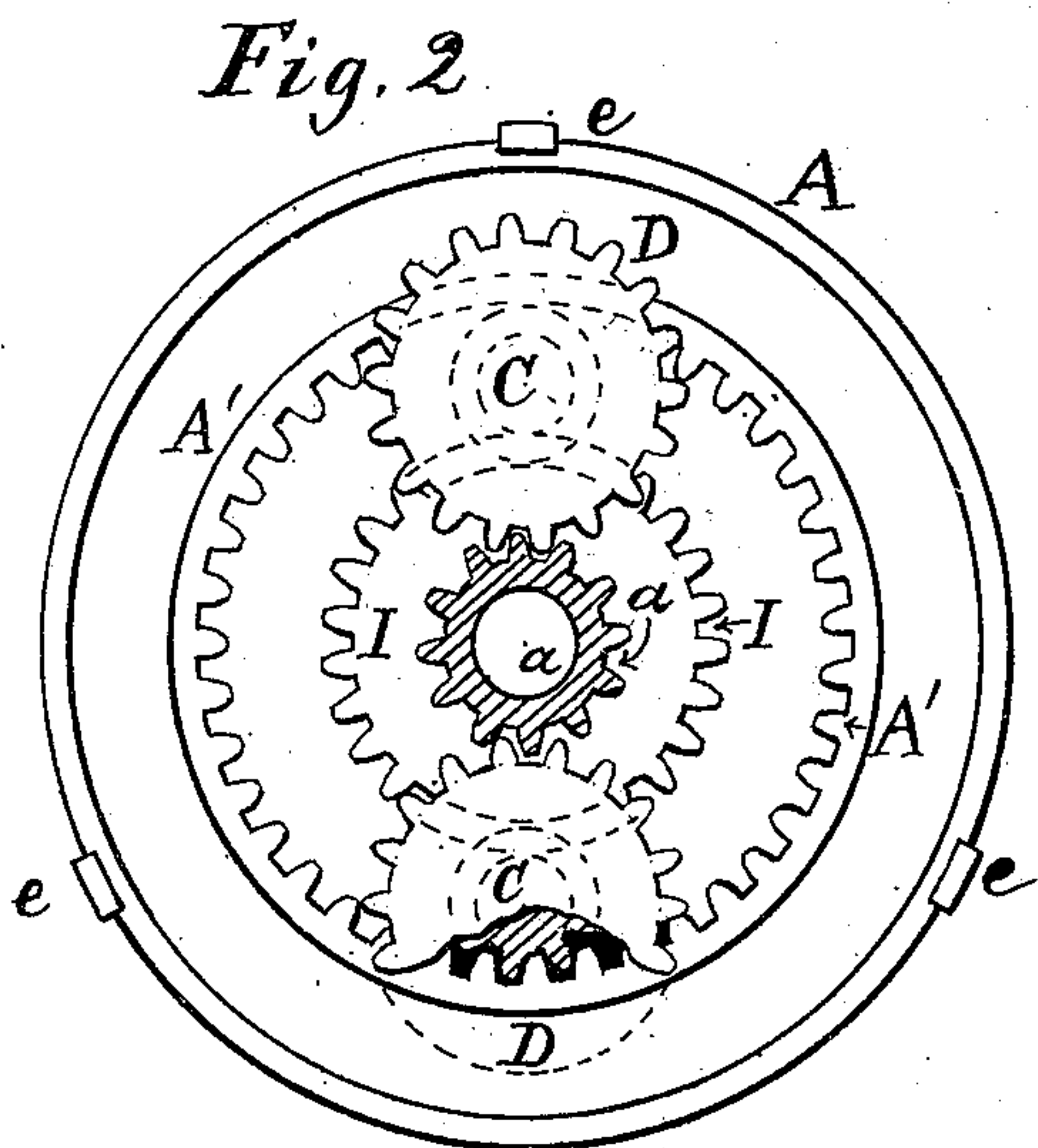
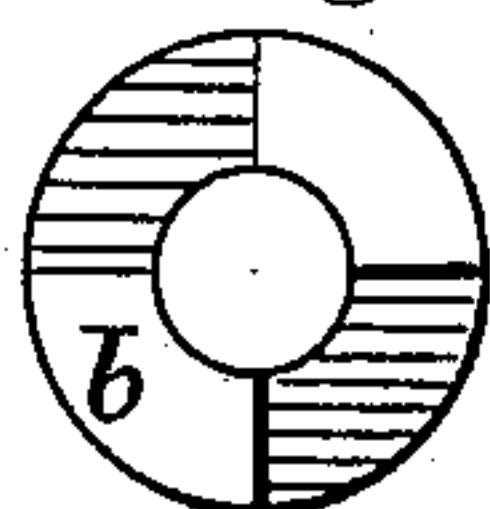


Fig. 4^{1/2}



Attest
Lewis Windhurst
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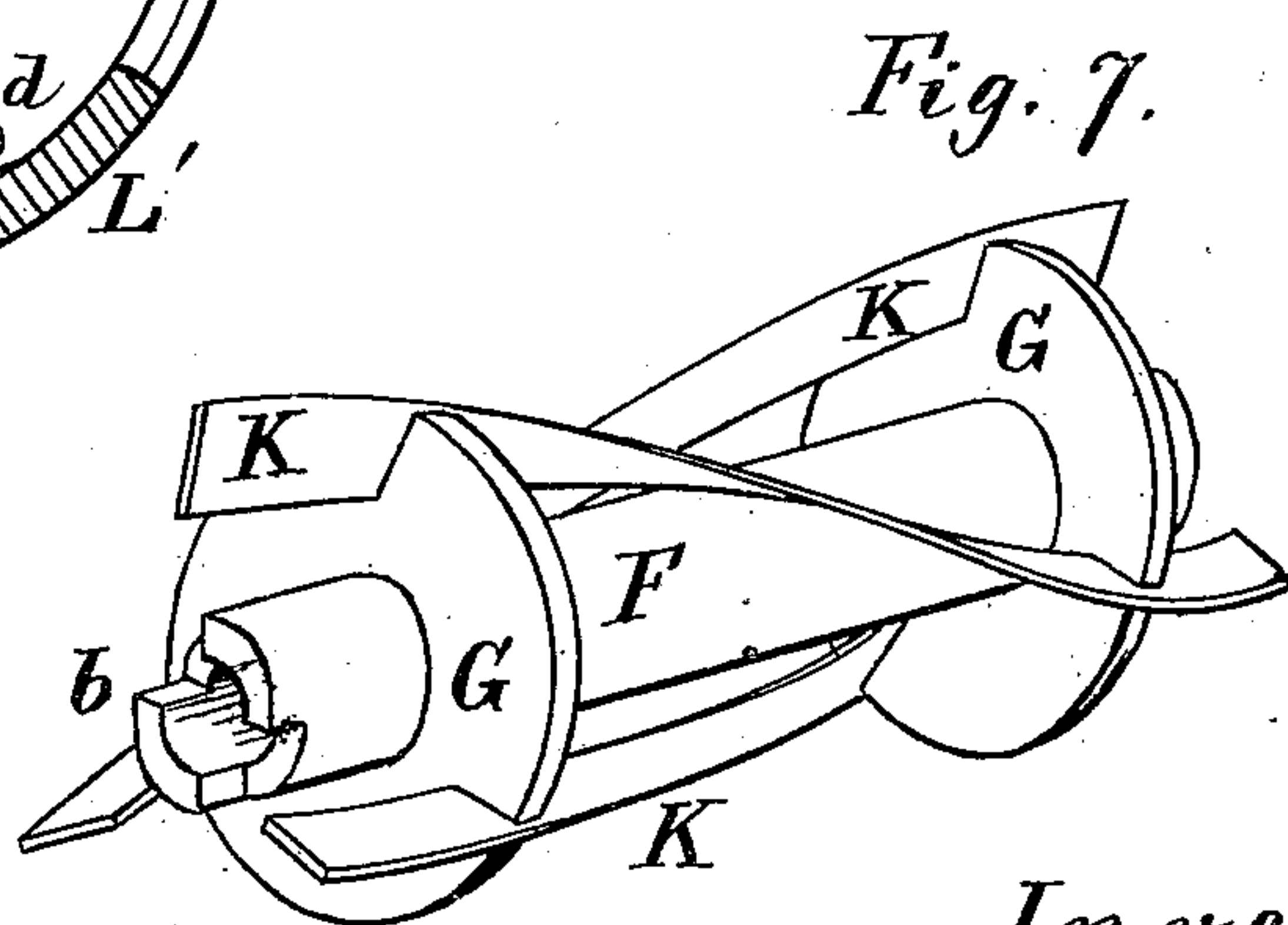
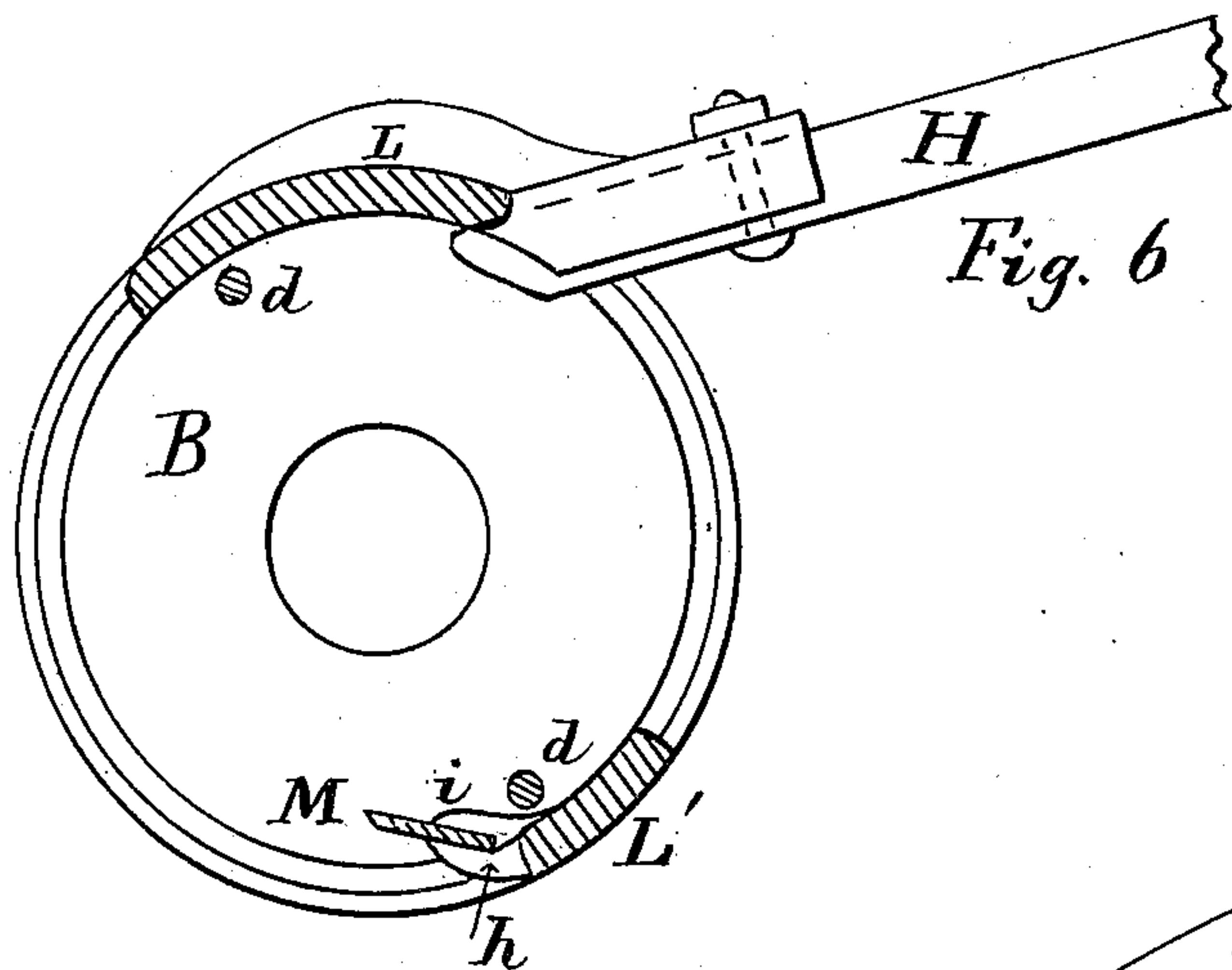
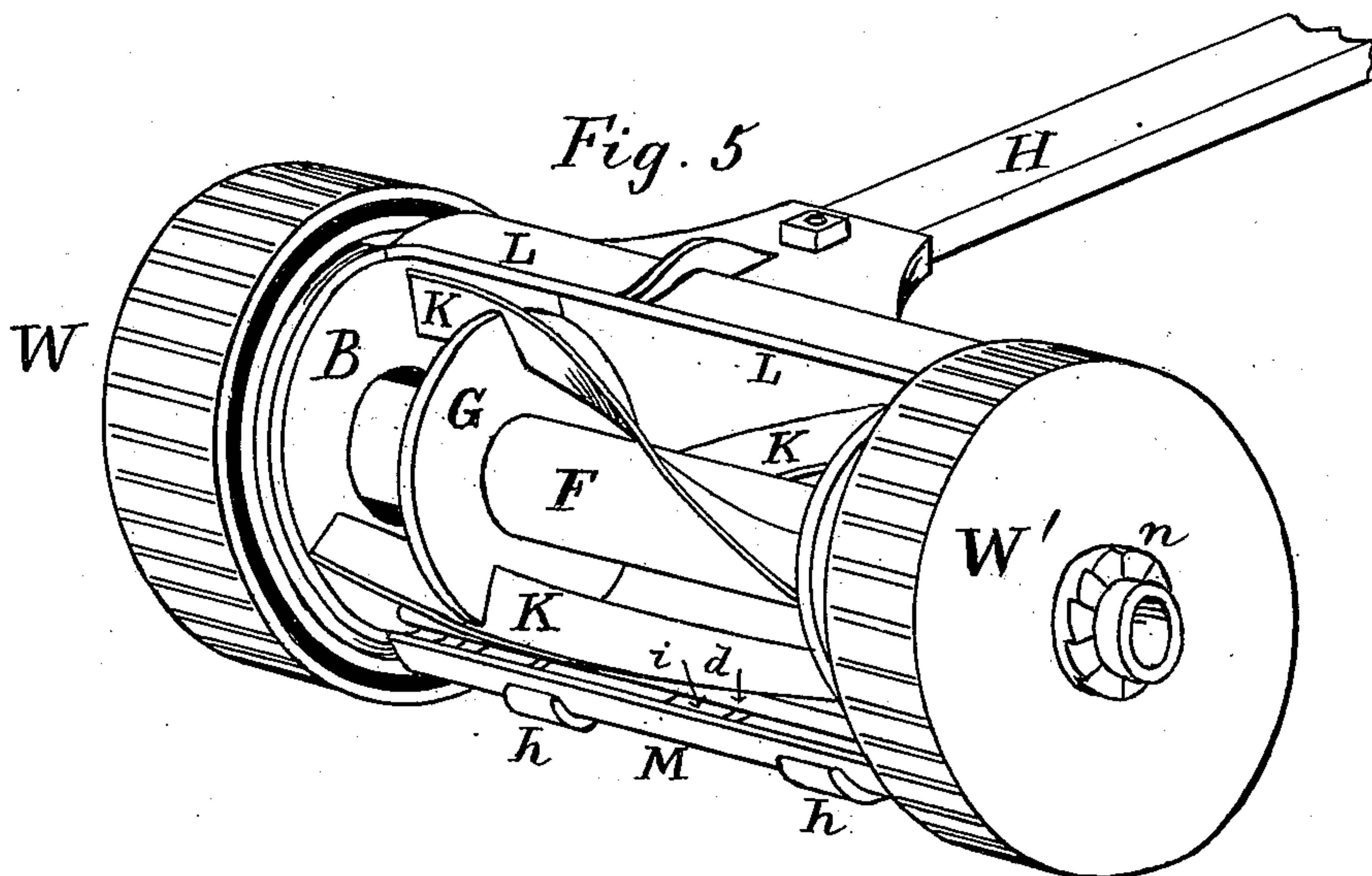
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UNITED STATES PATENT OFFICE.

FRANK M. WATERS, OF SPRINGFIELD, OHIO, ASSIGNOR TO DAVID P. MCKINNEY AND THOMAS E. MCKINNEY, OF SAME PLACE.

LAWN-MOWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 333,181, dated December 29, 1885.

Application filed November 28, 1884. Serial No. 148,979. (No model.)

To all whom it may concern:

Be it known that I, FRANK M. WATERS, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented a new and useful Lawn-Mowing Machine, of which the following is a specification.

My invention relates to improvements in that class of grass-cutting machines in which the cutting is accomplished by means of a series of knives or beaters, spirally arranged and fastened to a revolving frame or cylinder, which work against a fixed knife below.

The objects of my improvement are, first, to provide a suitable form or system of gearing, which can be effectually protected from particles of grass or other substances, which tend to interfere with its free operation as an agent in rotating the spiral cutters or beaters; second, to afford facilities for the proper adjustment of the cutter-bar to the revolving knives or beaters; third, to provide a cheaper and at the same time more effective mode of securing the spiral knives to the cylinder and the lower knife to the cutter-bar; fourth, to afford facilities for constructing a lawn-mower with as few parts and as little labor upon those parts as possible.

To better illustrate my invention, reference is made to the accompanying drawings, in which—

Figure 1 is a longitudinal cross-section of a lawn-mowing machine. Fig. 2 is a side elevation of the casing and gearing. Fig. 3 is a view of the parts of the casing in cross-section and of the gear-wheels. Fig. 4 is a side elevation of the clutch-pin. Fig. 4½ is an end elevation of the same clutch-pin. Fig. 5 is a perspective view of a lawn-mower. Fig. 6 is a cross-section of the same. Fig. 7 is a perspective view of the revolving cylinder and beaters or knives.

W W' are the ground-wheels, and S is the shaft, upon which at both ends are fastened the hubs N N, each containing a ratchet-pin, O, with a spring behind it, which serves to keep the pin in contact with the ratchet-hubs of the ground-wheels. Upon the shaft S are also placed the casing A, containing the annular gear A', of which it is a part, the combined spur-gear and pinion D C, the driving spur-

gear I, which is keyed or otherwise fastened to the shaft, and the clutch-pin *a*. Upon the shaft is also the cylinder F, with the flanges G, to which the knives or beaters K are fastened.

B is a part of the gear-casing, containing all the gearing, with a hole in its center large enough to allow the free rotary movement of the clutch-pin *a*, and having an annular groove near its circumference in the face that is nearest the center of the machine.

E is a disk, bored to fit the shaft S, which rotates freely in it, and having a similar annular groove in its inner face.

L is a sliding concave piece, having its ends fitted in said grooves, to which is secured the handle H. This piece and the cutter-bar L', which is also fitted in said grooves, the disk E, the casing B, the bolts *d d*, having tightening-nuts, which connect casing B with disk E, and the casing A constitute the frame of the machine.

The lugs or projections *e* on the case A fit into corresponding recesses on the other half B of the casing.

A' is the annular or fixed gear, which is a part of the casing A, and does not revolve upon the shaft, but forms the pivotal point of the pinion C, as shown in Fig. 2, when driven by the spur-gear I.

I is the spur gear or driver, which is keyed or otherwise fastened to the shaft.

D and C represent the combined spur-gear and pinion, which revolves freely upon its own axis between the annulus A' and the driving spur-gear I; and at the same time revolves around one common center, and meshes into the central clutch-pin, which engages with and drives the cylinder. Of these combined gears D C there may be one or more, a decided advantage being gained by using two or three, as they serve to balance the central pinion between them and remove to a great extent the friction upon the shaft.

The clutch end *b* of the clutch-pin engages with a similar clutch upon the end of the cylinder, to which it communicates its rotary movement.

Knife M is fastened to the cutter-bar by alternate top and bottom lugs or projections, *i* and *h*, between which it (M) is driven after being hardened and tempered, and thus held

firmly in position, since the resistance to the knife in cutting is in the same direction as when driven into its proper position on the cutter-bar.

5 *KK* are the knives or beaters, which are held in position by being driven into slots milled or sawed into the flanges *G*.

10 It will now readily be seen by referring to Fig. 6 that the top concave piece, *L*, to which the handle is fastened, and the cutter-bar *L'*, to which the knife is secured, are both held in position by having their ends fitted loosely into grooves on the disks on either side, and held in this position by the long bolts *d d*, which
15 are plainly shown in Fig. 1, thus making the lower knife adjustable by simply manipulating the lower bolt *d*, while by unscrewing the nut upon the upper bolt *d* the top concave piece can be slipped around either way in the

grooves, and by so doing raise or lower the 20 cutter-bar and regulate the depth of cut.

What I claim, therefore, as new and of my invention, and desire to secure by Letters Patent, is—

1. In a lawn-mowing machine, the handle 25 *H*, the sliding concave *L*, the cutter-bar *L'*, the grooved casing *B*, the grooved disk *E*, and the bolts *d d*, arranged as and for the purpose described.

2. In combination with the revolving knives 30 of a lawn-mowing machine, the cutter-bar *L'*, having the lugs *i* and *h*, and the knife *M*, arranged as and for the purpose described.

FRANK M. WATERS.

Witnesses:

H. S. SHOWERS,
JNO. M. SPECK.