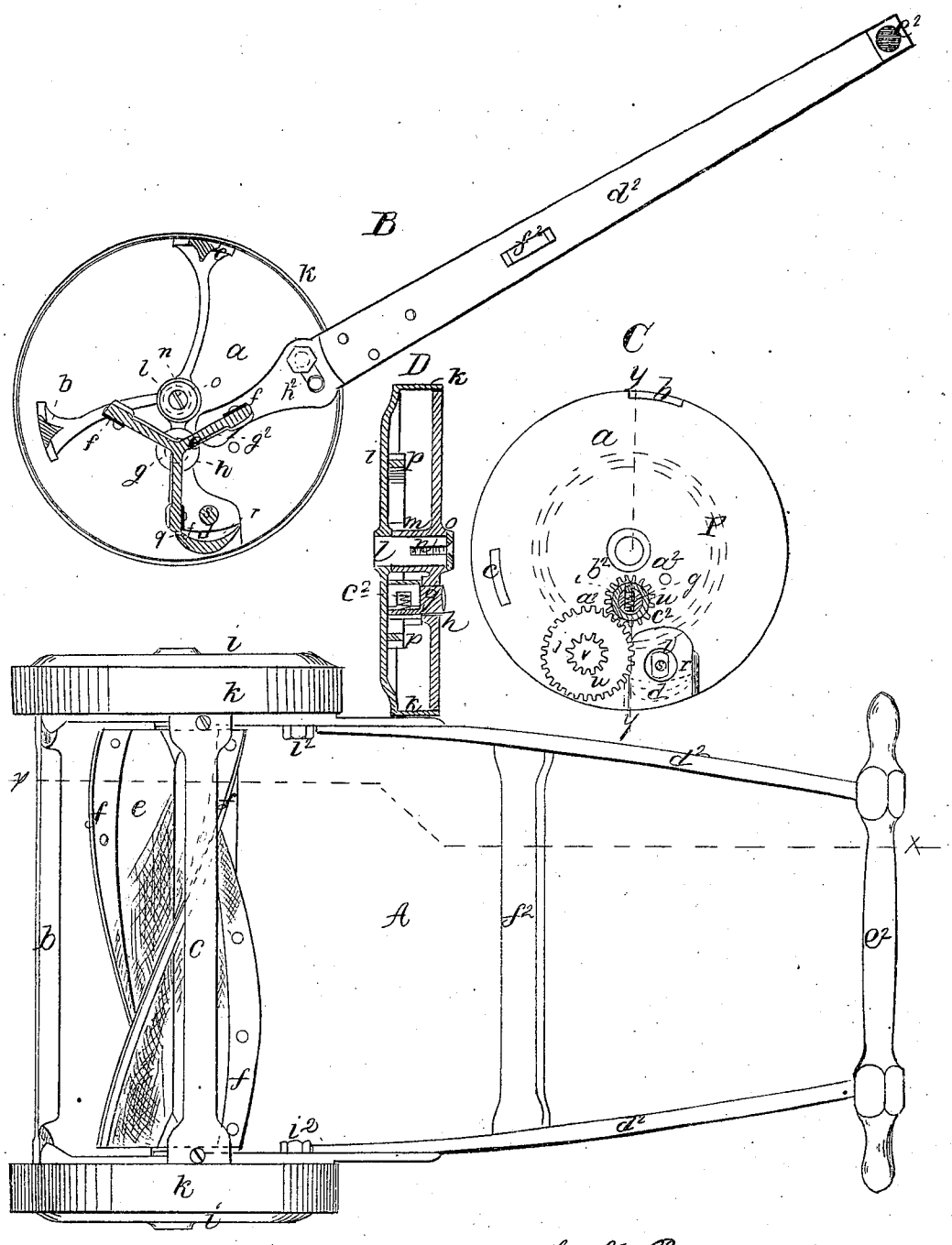
# L. Ross.
## Lawn Mower.

No. 110,592. Patented Dec. 27, 1870




Witnesses
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# UNITED STATES PATENT OFFICE.

LUTHER ROSS, OF WORCESTER, MASSACHUSETTS.

## IMPROVEMENT IN LAWN-MOWERS.

Specification forming part of Letters Patent No. **110,592**, dated December 27, 1870.

*To all whom it may concern:*

Be it known that I, LUTHER ROSS, of Worcester, in the county of Worcester, in the State of Massachusetts, have invented an Improved Lawn-Mower; and I do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

My invention relates to the construction of a lawn-mower having a cutter-cylinder arranged between two stationary heads of a journal-frame, with its gudgeon journaled in said heads, the heads having projecting outwardly from the center of each a sleeve, which forms a bearing for a short stud or journal-pin projecting inwardly from the center of a driving-wheel, each driving-wheel being formed of an outer plate, from the perimeter of which projects a peripheral flange, and from the center of which projects the journal or axle pin, the stationary head and the wheel-plate and flange forming the gear-containing case.

The drawing represents a machine embodying my invention.

A shows the machine in plan. B is a vertical section on the line *x x*. C is an inside view of one of the stationary heads and the gearing, showing the ratchet mechanism in section. D is a section of the gear-case on the line *y y*.

*a a* denote two stationary heads or plates, which, with the connecting-bars *b c* and dead knife or bar *d*, constitute the frame for supporting the rotary cutting-cylinder, the driving-wheels, the gearing, (connecting driving-wheels and cutter-cylinder) and the handles for propelling the machine. *e* denotes the cutter-cylinder, formed with spirally-arranged blades, upon the edges of which are fixed the steel cutters or knives *f*, and having axial gudgeons *g*, journaled in bearings *h* in the frame-heads *a*, the axis of the cutter-cylinder being in or near to the vertical plane of the center of the heads *a*. *i i* denote the two driving-wheels, each wheel being composed of a circular plate having a peripheral flange, *k*, and a center gudgeon or axle-pin, *l*, said pin being supported in a sleeve-bearing, *m*, extending from the frame-plate, as shown at D.

The wheel and frame-plate are held together or in relative position by a screw-pin, *n*, and washer *o*, and they form the gear-casing, as seen at D.

The cutter-cylinder works in connection with a dead-knife, *d*, which consists of a bar of cast-iron having a chilled cutting-edge, *q*, the bar extending from head to head, and having at its ends ears *r*, in which are slots, through which pass screw-bolts *s*, having nuts *t*, by means of which the bed-knife is fixed in position, each bolt passing through the adjacent head *a* and the ear *r* against the same. The slots permit the bed-knife to be adjusted in position with reference to the cutting-edges of the knives of the cutter-cylinder.

The mechanism connecting the cutter-cylinder and each driving-wheel is as follows: On the inside face of each wheel is a spur-gear, *p*, cast preferably with the wheel-plate, and the teeth of this gear engage with the teeth of a pinion, *j*, on an intermediate gear-wheel, *u*, turning on a stud-pin, *v*, projecting from the adjacent head, the gear *u* meshing into and driving a pinion, *w*, on a clutch-sleeve, *x*, turning on or with the adjacent cutter-cylinder gudgeon. This sleeve has ratchet-notches $a^2$, into which slips the point of a sliding pawl or tooth, $b^2$, located in a slot in the gudgeon, this pawl resting at its rear against a spring, $c^2$, as seen at C. The point of the tooth is inclined, as is also the opposite face of each ratchet-notch, so that as the pinion turns in one direction it carries with it the gudgeon and drives the cutter-cylinder, while in rotating in the opposite direction the notches press down the pawl so that the pinion rotates free from the cutter-cylinder. This arrangement insures the rotation of the cutter-cylinder (from the movement of the driving-wheels) as the machine is pushed forward, and its non-rotation as the machine is drawn back.

$d^2$ $d^2$ denote the two long shafts of the handles, connected at their outer ends by a hand-bar, $e^2$, and farther down by a stretcher, $f^2$. Each shaft $d^2$ has at its end a pivot-pin, $g^2$, by which it is hung to the adjacent frame-head *a*; and at a short distance from this pin is a slot, $h^2$, through which projects a screw, $i^2$, the head of which abuts against the shaft, while the screw-shank enters a nut-threaded hole in the head. By turning up the screws the handle is fixed in inclined position, and by loosening the screws the inclination may be varied to

suit the height of the person driving the machine, the slots permitting this change of inclination.

A series of concentric holes, $k^2$, may be made in the heads $a$, and a series of pivot-holes also; and by means of the duplication of these holes the range of adjustment of inclination of the handle may be enlarged.

In all other lawn-mowing machines known to me the cutter-cylinder is journaled in a plane in front of the axis of the driving-wheels, the dead-knife being, of course, placed in a corresponding position. Such construction makes it necessary to use a roller or shoes to regulate the height or cutting-plane of the cylinder and dead-knife, and the friction of such roller or shoes adds very materially to the force required to drive the machine.

In my machine I dispense with any forward shoes, and also with a guide or friction leader-roll, by making the driving-wheels the transmitters of motion and placing the axis of the cutter-cylinder and the cutting-edge of the dead-knife in the same vertical plane with the centers of the driving-wheels. This arrangement makes the machine very compact, simple, and enduring, and enables it to be operated without any friction (other than that of the driving-wheels) against the ground.

I claim—

1. The arrangement of the driving-wheels, cutter-cylinder, and dead-knife, substantially as described, so that when the machine is in working position the axes of rotation of the wheels and cylinder and the cutting-line of the cylinder and dead-knife are in the same or substantially the same vertical plane.

2. The described geared connection of the driving-wheels and cutter-cylinder, each driving-gear being a spur-gear, $p$, fixed upon the adjacent driving-wheel, and meshing into a pinion, $j$, on an intermediate, $u$, turning on a stud-pin, $v$, projecting from the adjacent head, the intermediate meshing into and driving the fast-and-loose pinion $w$ on the adjacent journal of the cutter-cylinder.

LUTHER ROSS.

Witnesses:
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