

H. R. LOUNSBERY, JR.
LAWN MOWER.
APPLICATION FILED JULY 29, 1910.

1,041,124.

Patented Oct. 15, 1912.

3 SHEETS—SHEET 1.

Fig. 1.

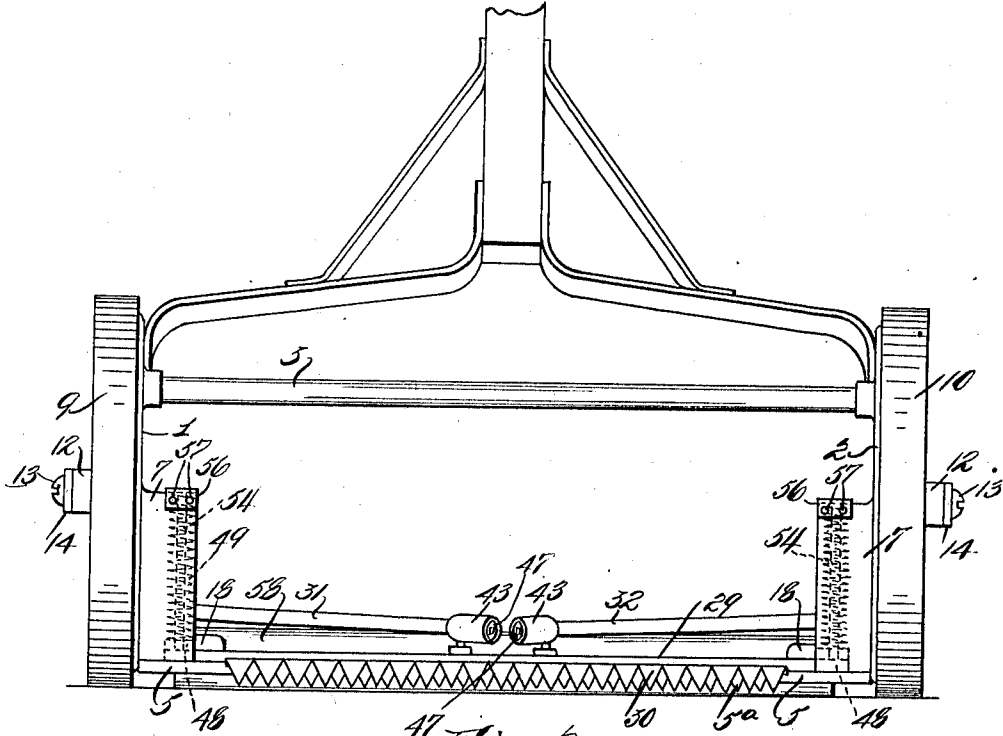
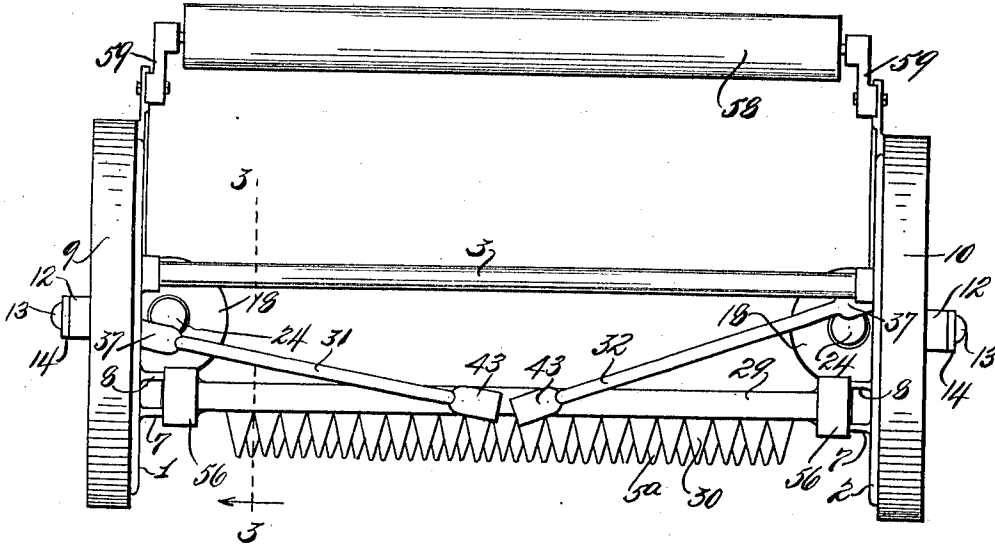


Fig. 2.

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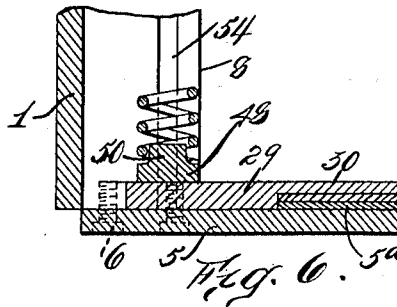
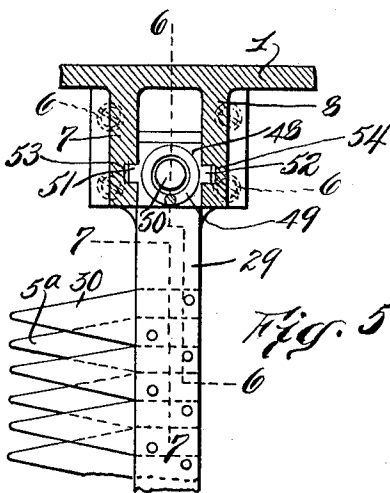
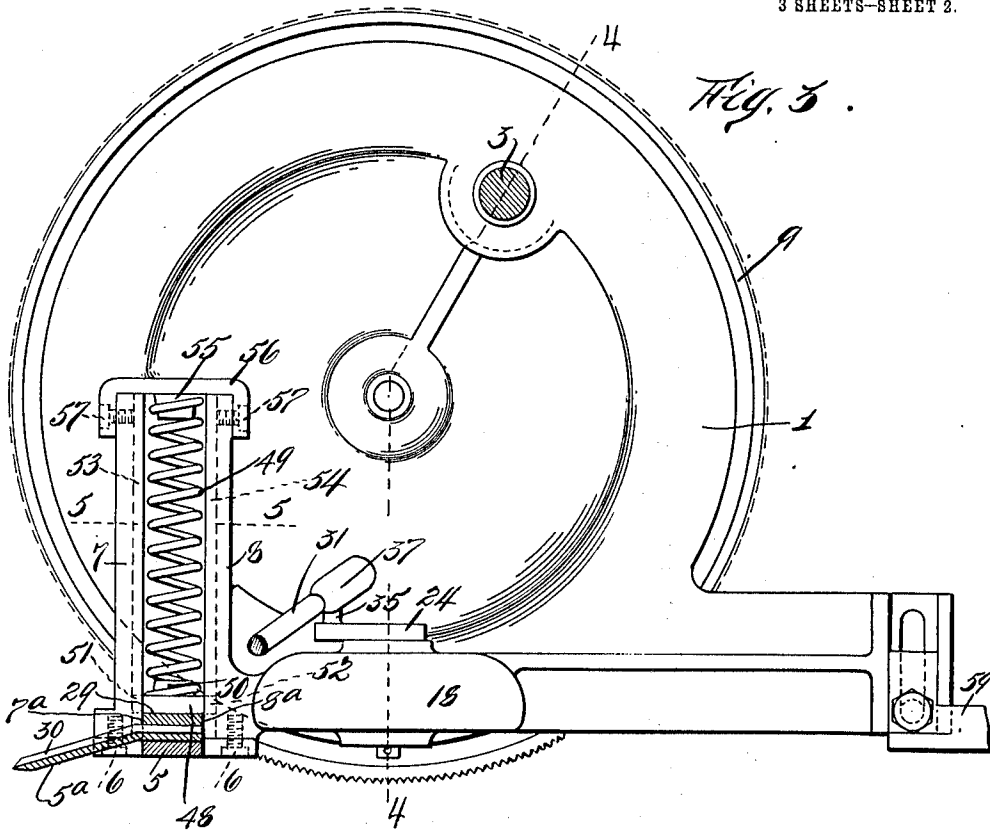
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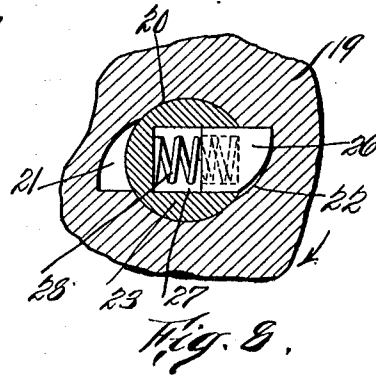
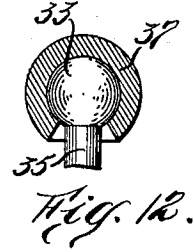
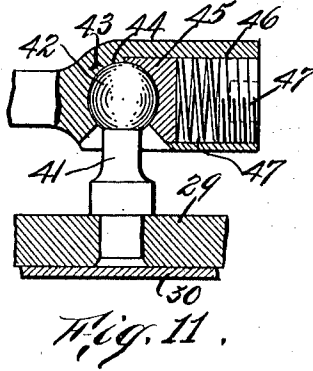
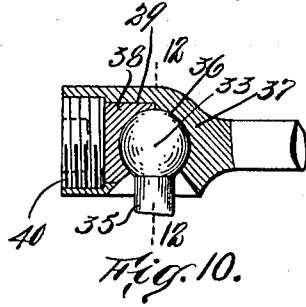
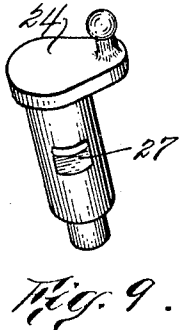
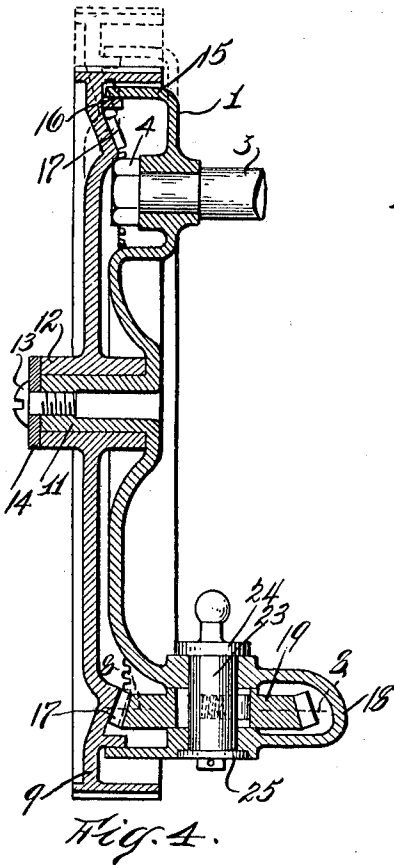
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3 SHEETS-SHEET 3.



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UNITED STATES PATENT OFFICE.

HENRY R. LOUNSBERY, JR., OF KATONAH, NEW YORK.

LAWN-MOWER.

1,041,124.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY R. LOUNSBERY, Jr., a citizen of the United States, residing at Katonah, New York, have invented certain new and useful Improvements in Lawn-Mowers, of which the following is a clear, full, and exact description.

This invention relates to lawn-mowers, and has for its objects the provision of improved means for mounting and supporting the driving wheels, improved means for the actuation of the reciprocating cutter, and improved means for mounting and guiding the reciprocating cutter, and for pressing the same yieldingly so that it will yield to any hard substances without injury to the cutter.

Further objects are to provide improved joints between the cutter and the operating mechanism so that the cutter will operate reliably and with little friction between the connecting parts, and an improved pawl and ratchet connection between the driving gear of the cutter and the cutter, so that the reciprocating cutter will be reciprocated in one direction of movement of the lawn-mower and will remain stationary during the movement of the lawn-mower in opposite direction; and to provide generally a reliable and efficient lawn-mower.

These being among the objects of the invention, the same consists of certain features of construction and combinations of parts to be hereinafter described and pointed out in the claims, with reference to the accompanying drawings showing a desirable embodiment of the invention and in which—

Figure 1 is a plan view of so much of a lawn-mower as is necessary to illustrate the present improvements; Fig. 2 is a front elevation of the same; Fig. 3 is a transverse section of the lawn-mower on the line 3—3 Fig. 1; Fig. 4 is a section on the line 4—4 Fig. 3; Fig. 5 is a section on the line 5—5 Fig. 3 showing details of the invention; Fig. 6 is a section on the line 6—6 Fig. 5; Fig. 7 is a section of the upper cutter-holder and cutter on the line 7—7 Fig. 5; Fig. 8 is a detail section on the line 8—8 Fig. 4; Fig. 9 is a detail perspective view of the crank shaft for the operating gear; Figs. 10 and 11 are respectively detail longitudinal sections of the ball and socket connections at the outer end of the pitman, whereby the same is connected with the crank shaft, and of the ball and socket connection at the in-

ner end of the pitman, whereby the same is connected with the reciprocating cutter; and Fig. 12 is a transverse section on the line 12—12 of Fig. 10.

Referring to the drawings, the frame of the machine is shown as comprising two end plates 1, 2, which are connected together by means of a transverse rod 3, secured to the plates by means of nuts 4, said frame also comprising a connecting bar 5 which, in the present form of the invention, constitutes the holder for the lower or fixed cutter. Bar 5 is secured by screws 6 to the lower ends of paired flanges 7, 8, there being a pair at each side of the machine. The said end plates 1, 2, of the frame are of less diameter than the diameters of the driving wheels 9, 10, which are journaled on the frame and supported, as will now be described. Each of said end plates 1, 2, is provided with an outwardly extending central bearing 11, said bearing being preferably hollow and formed in one with the end plate, as shown clearly in Fig. 4. Each of the driving wheels 9, 10, is provided with a hub 12, which receives the bearing 11 on each end plate, while the wheels are each secured to their respective end plate by means of a screw 13 which is screwed into the hub, while a washer 14 is located under the head of the screw and bears upon the outer ends of the bearing 11 and the hub 12. In this manner the wheels are supported upon the frame so that they can turn with little friction and without coming off. Said end plates are each provided with an outwardly extending annular edge flange 15, while each of the driving wheels is provided on its inner side with an annular flange 16 which telescopes with, or is in close relationship to, the annular flange 15 of the adjacent end plate. In this way the parts between the end plates and the driving wheels are closed in or housed so that access of dirt, stones and grass cannot be had to the inclosed parts.

Each of the driving wheels 9, 10, is provided with an annular series of gear teeth 17, which are concentric with and are surrounded or circumscribed by the annular flange 16. One of the said end plates is provided with a preferably integral housing 18 located to one side at a point adjacent the said lower cutter-holder 5. Said housing 18 is large enough and is so shaped as to house a transmission gear 19, the teeth of which mesh with the annular series of teeth 17 of

the adjacent driving wheel, said gear wheel being confined between the upper and lower sides of said housing 18. Said housing 18 serves to exclude dirt and other matter from the gear 19 and concomitant parts. Said gear 19 is furthermore provided with an axial opening 20 (see Fig. 8), and with preferably beveled recesses 21, 22, located at diametrically opposite points of said axial opening 20. Extending through said axial opening 20 is a short crank shaft 23, which has bearing in the upper and lower sides of the housing 18 and which is held in position by means of a crank 24, preferably formed integral with the said shaft and by a collar 25 (see Fig. 4), which collar is retained in position by a cotter-pin or equivalent fastening. The said shaft 23 permits the gear wheel to turn thereon when required, without play, and a beveled pawl or tooth 26 slidingly mounted upon the said shaft 20 constitutes, with the recessed portion of the gear 19, pawl and ratchet means, whereby when the machine is moved forward to cut grass, the turning of the gear in the direction of the arrow (Fig. 8) will carry the crank shaft with it, while when the gear 19 turns in the opposite direction the crank shaft remains stationary due to the fact that the beveled pawl 26 is pressed inwardly into the transverse guide hole 27 in the crank shaft. A spring 28 located in the inner end of said guide hole 27 tends to project the said pawl 26 outwardly and into one of the notches or recesses 21, 22, when the same is moved opposite said pawl. It will be seen that the housing and gear wheel, together with the described concomitant parts, occupy but a small compass, partially owing to the fact that the pawl and ratchet means 21, 22, 26, 27 and 28 are located within the gear, in the plane of its rotation. The said crank shafts 23 are used for the purpose of imparting a reciprocatory movement to the holder 29 and cutter 30 located above the fixed holder 5 and its cutter 5^a. To this end the said crank shafts are connected by means of pitmen 31, 32 with the middle portion of the reciprocating cutter-holder 29. The said pitmen therefore extend from opposite sides of the machine toward its middle portion and are so arranged and connected with appropriate parts at their ends, that one of the pitmen acts to pull the reciprocating cutter toward it, while the other acts to push the reciprocating cutter away from it. Figs. 1 and 2 clearly show the disposition of the pitmen and parts connected therewith.

Referring now to Figs. 4, 10, and 12, each pitman is shown as having an appropriate ball and socket connection with its crank shaft. The ball 33 is located at the upper end of an upwardly standing post 35 and is received in a socket 36 at the outer end of

the pitman, which socket comprises a half socket 37 formed integral with the pitman, and a half socket 38 which is held in position in a bore or opening 39 in the end of the pitman by means of a screw plug or nut 40. The manner of assembling the described parts of the ball and socket joint will be apparent without further detail. At the inner end of each pitman is also a ball and socket connection with the reciprocating cutter-bar as illustrated in Fig. 11, and said ball and socket joint comprises a portion consisting of a fixed stud or post 41 firmly secured to the upper cutter-holder 29, and upon which is formed a ball 42, and another portion consisting of a socket 43 on the pitman. Said socket 43 comprises a half socket 44 formed in the pitman, and a movable half socket 45 which is mounted in a longitudinal bore or opening 46 in the end of the pitman. A spring 47 presses the half socket 45 against the ball 42 and said spring and half socket are confined in position by means of a screw plug or nut 47 screwed into the outer end of bore or opening 46. To enable the turning of said screw plugs 40 and 47, the same are preferably provided with squared holes indicated in dotted lines in Figs. 10 and 11, into which wrenches or turning devices may be inserted. It will be seen that if during the operation of the lawn-mower the upper cutter should be dislocated or moved away from its normal cutting position, such movement will be permitted by reason of the yielding of the half sockets 45 in the inner ends of each pitman, so that there will be no injury to the connecting parts due to such shock.

Parallel flanges 7, 8 located at both ends of the frame of the machine have already been referred to. The lower ends 7^a, 8^a, of said flanges constitute guides for the reciprocating holder 29 of the upper cutter 30, as will be apparent from Figs. 3, 5 and 6. Said flanges also contain means for yieldingly pressing upon the upper cutter-holder and cutter, so that should the cutters strike a stone or other hard substance, the upper cutter can yield and move away from the fixed cutter without danger of injury thereto. When the obstruction has been removed the said yielding means will move the movable cutter back to coöperative relationship with the fixed cutter 5^a. Such yielding means comprises foot pieces 48 at opposite sides of the machine between said flanges 7 and 8, said foot pieces bearing downwardly upon the upper cutter-holder 29, by reason of the downward pressure imparted by springs such as 49. The lower end of each spring is seated upon a centering projection 50 on each foot piece, and the foot pieces are guided vertically by means of side ribs 51, 52, which are guided in longitudinal grooves 53, 54 in opposite

flanges 7, 8. The said guiding means not only serves to guide the foot pieces in their movement upwardly and downwardly, but also serves to prevent the dislocation or loss of the foot pieces while the machine is in use. Each of said springs 49 extends upwardly between the opposing flanges 7, 8, and at its upper end is seated upon a centering projection 55 on the underside of a cap or keeper 56, which is secured to the flanges 7, 8, preferably by means of screws 57.

The rear of the lawn-mower is supported in well known manner as by a caster roller 58 suitably supported from the frame of the machine by arms such as 59.

What I claim is:

1. In a lawn-mower, the combination of a frame comprising an annularly flanged end plate, a driving wheel provided with an annular flange of less diameter than said wheel and substantially in contact with the flange of said end plate, means for mounting said wheel on said end plate, and cutters, one of which is operated from said wheel.

2. In a lawn-mower, the combination of a frame comprising an annularly flanged end plate having a gear housing which bulges inwardly from one side of said plate away from its plane, a driving wheel located on the other side of said plate, provided with an annular flange substantially in contact with the flange of said end plate, said gear housing being located approximately at a point between the said wheel flange and said end plate, and said wheel having an annular series of bevel teeth surrounded by its flange, means for mounting said wheel on said end plate, a shaft journaled in said housing, a bevel gear mounted on said shaft and substantially inclosed in said housing and meshing with said teeth, and cutters, one of which is operated from said wheel.

3. In a lawn-mower, the combination of a frame, a driving wheel mounted on said frame, and provided with an annular series of teeth, shaft bearings supported from said frame, a crank shaft journaled in said bearings, a gear mounted on said shaft, and meshing with said teeth, said gear having ratchet means comprising two opposite recesses in its inner wall, and said shaft having a transverse socket against the closed inner end thereof, a spring seated in said socket, a beveled pawl guided in said socket and projected outwardly by said spring into one of said recesses, a fixed cutter, a reciprocating cutter, and a pitman connecting said reciprocating cutter with said crank shaft.

4. In a lawn-mower, the combination of a frame, a fixed cutter and a reciprocating cutter, a crank shaft, means for rotating said shaft, a pitman, and ball-and-socket

joints between the ends of said pitman and said reciprocating cutter and crank shaft, each joint consisting of a ball connected with its appropriate pitman, a half socket on said pitman and a relatively movable half socket in said pitman.

5. In a lawn-mower, the combination of a frame, a fixed cutter and a reciprocating cutter, a crank shaft, means for rotating said shaft, a pitman, said pitman being jointed to said crank shaft and reciprocating cutter, one of said joints comprising a ball-and-socket joint consisting of a ball on one of said parts connected with said pitman, a half socket on said pitman, and a spring pressed half socket in said pitman.

6. In a lawn-mower, the combination of a frame, driving wheels journaled at opposite sides thereof, and each provided with an annular series of teeth, crank shafts journaled on said frame, gears mounted on said crank shafts and meshing with said teeth of both wheels, a fixed cutter, a reciprocating cutter, and two pitmen connected, contiguous to each other with the middle portion of the reciprocating cutter, and extending outwardly toward and connected with said crank shafts of said gears.

7. In a lawn-mower, the combination of a frame comprising annularly flanged end plates, driving wheels provided with annular flanges of less diameter than said wheels and substantially in contact with the flanges of said end plates, means for mounting said wheels on said end plates, said wheels being each provided with an annular series of teeth, and said frame also comprising gear housings, gears journaled in said housings and meshing with said teeth of both wheels, a fixed cutter, a reciprocating cutter, and two pitmen connected with the middle portion of the reciprocating cutter, and extending outwardly toward and operated from said gears.

8. In a lawn-mower, the combination of a frame, a fixed cutter, a reciprocating cutter, end guides for said reciprocating cutter, means for operating said reciprocating cutter, presser feet bearing yieldingly on said reciprocating cutter, flanges on said frame provided with guides for said feet, and springs within said flanges, acting on said feet.

9. In a lawn-mower, the combination of a frame, parallel flanges at both sides of said frame, a cutter fixed to said flanges, a reciprocating cutter guided at the ends by the lower ends of said flanges, means for operating said reciprocating cutter, presser feet guided between said flanges and bearing upon said reciprocating cutter, caps fixed to the upper ends of said flanges, and springs arranged between said caps and presser feet.

10. In a lawn-mower, the combination of

a frame, a driving wheel mounted on said frame, and provided with an annular series of teeth, shaft bearings supported from said frame, a crank shaft journaled in said bearings, a gear mounted on said shaft, and meshing with said teeth, said gear having ratchet means comprising a recess in its inner wall, and said shaft having a transverse socket, a spring seated in said socket against the closed inner end thereof, a beveled pawl guided in said socket and projected outwardly by said spring into one of said recesses, a fixed cutter, a reciprocating cutter, and a pitman connecting said reciprocating cutter with said crank shaft.

11. In a lawn-mower, the combination of a frame, a fixed cutter, a reciprocating cutter, guides for the ends of said reciprocating cutter for guiding said cutter longitudinally, means for operating said reciprocating cutter, presser feet bearing frictionally on said

reciprocating cutter, upright guides for said feet, and springs within said guides, acting on said feet.

12. In a lawn-mower, the combination of a frame, upright parallel flanges, arranged in pairs, respectively located one at each side of said frame, a cutter, the ends of which are fixed to said flanges, a reciprocating cutter guided at the ends by the lower ends of said flanges, spring actuated means located between the flanges of each pair and pressing upon both ends of said reciprocating cutter, and means for operating said reciprocating cutter.

Signed at New York city, New York this 25th day of July, 1910.

HENRY R. LOUNSBERY, JR.

Witnesses:

EMERSON R. NEWELL,
BEATRICE MERVIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."