

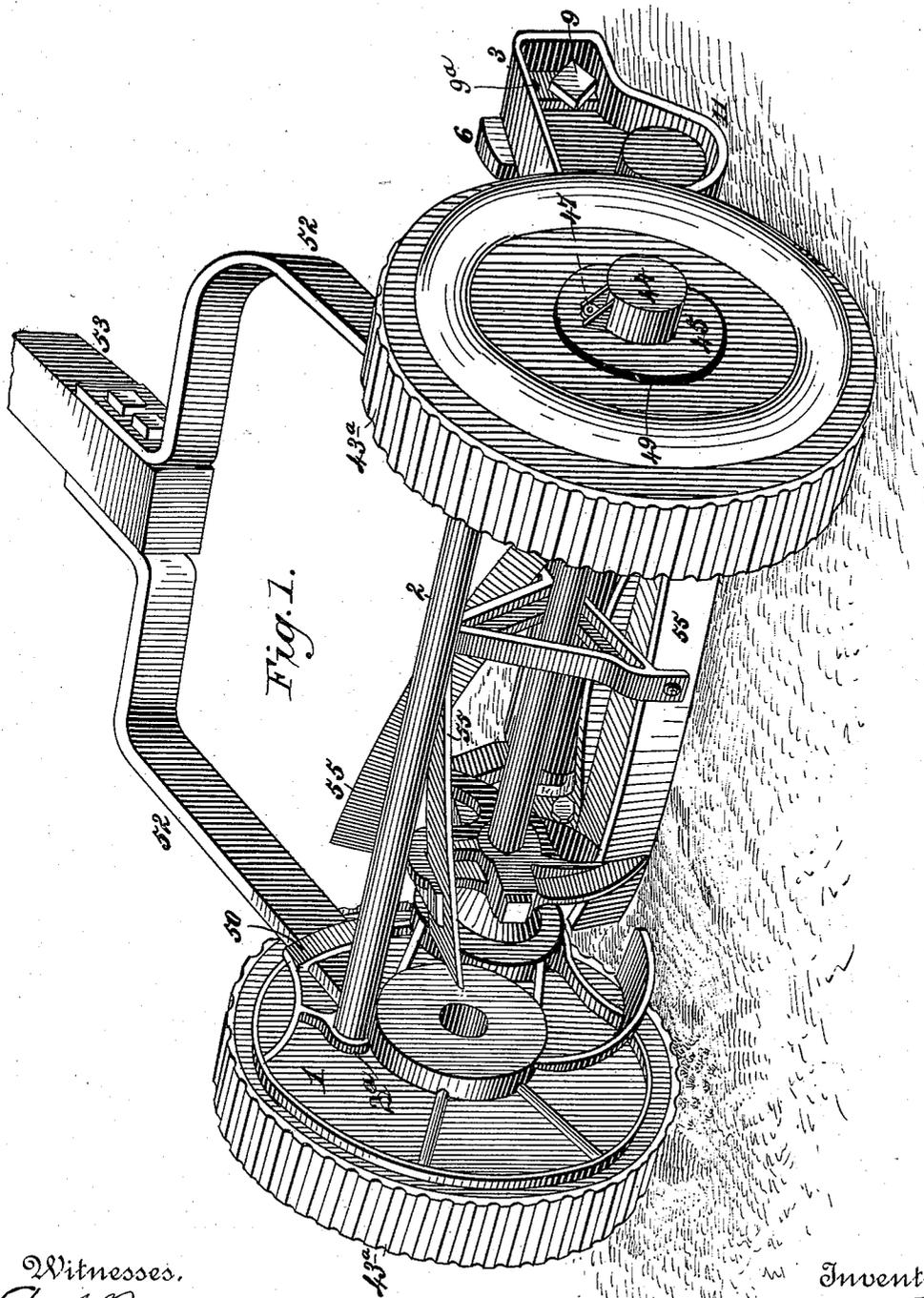
(No Model.)

4 Sheets—Sheet 1.

J. V. ROWLETT.  
LAWN MOWER.

No. 383,829.

Patented May 29, 1888.



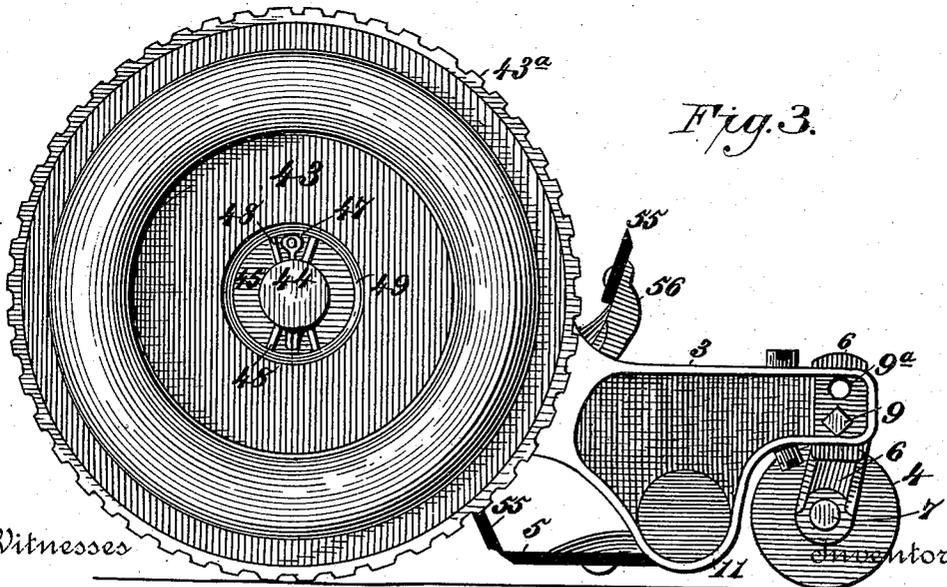
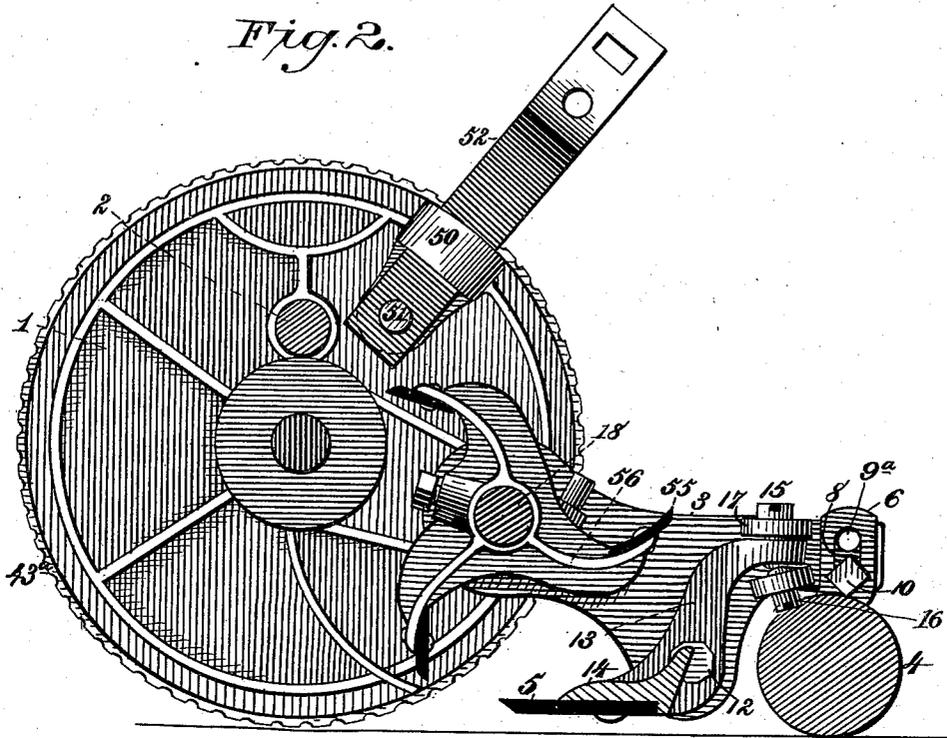
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Fig. 4.

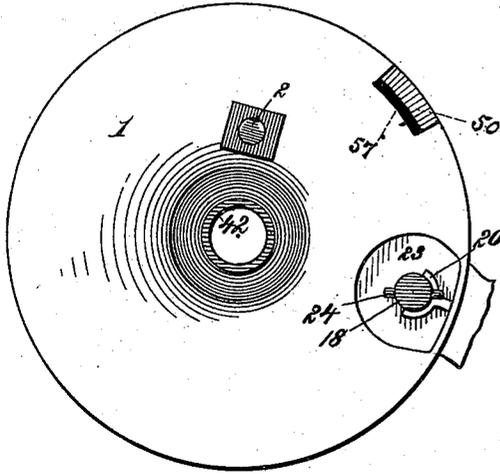


Fig. 5.

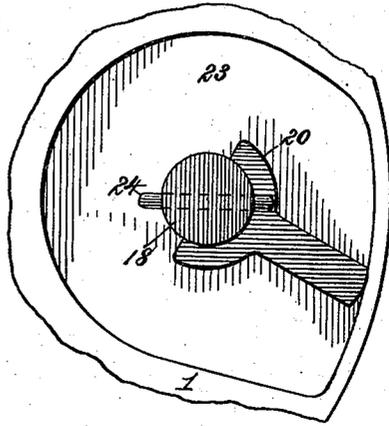


Fig. 6.

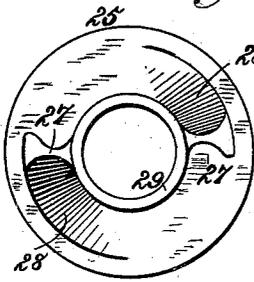


Fig. 8.

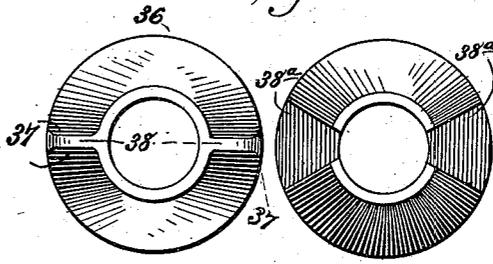


Fig. 10.

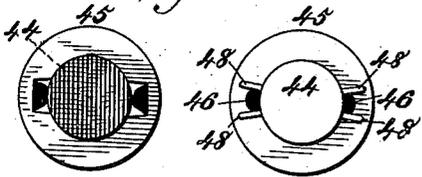


Fig. 7.

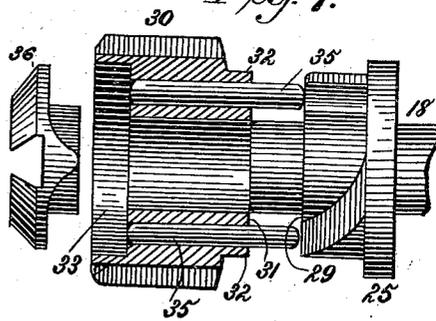
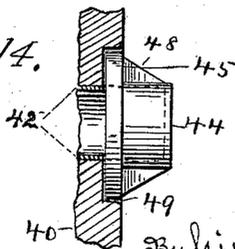


Fig. 14.



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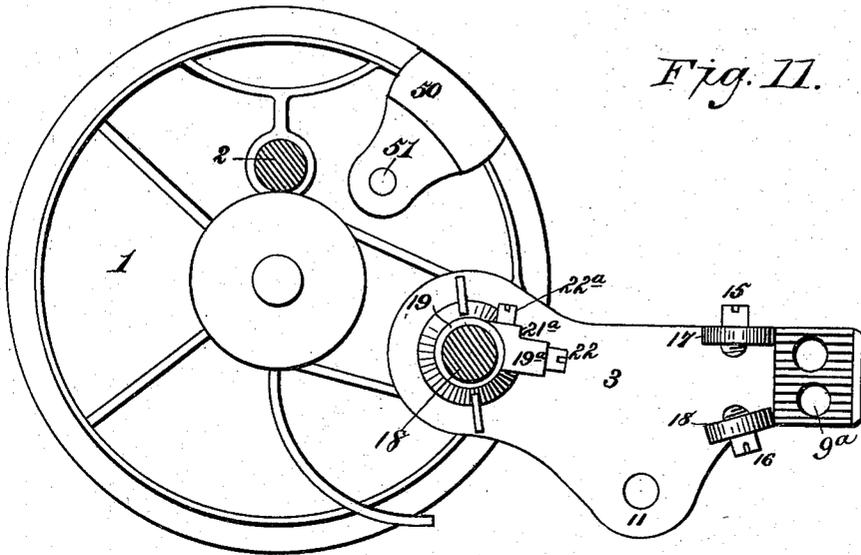


Fig. 11.

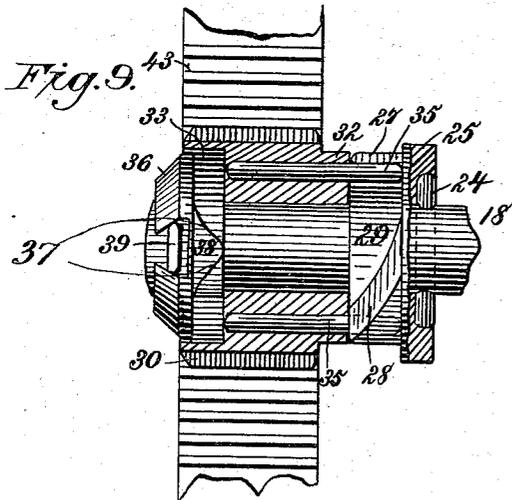


Fig. 9.

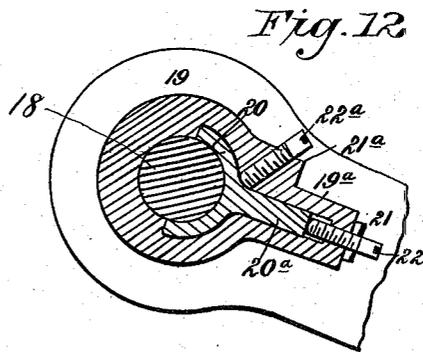


Fig. 12.

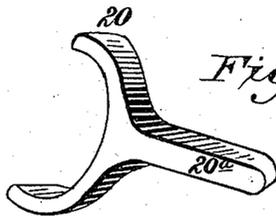


Fig. 13.

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# UNITED STATES PATENT OFFICE.

JACOB VORE ROWLETT, OF RICHMOND, INDIANA.

## LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 383,829, dated May 29, 1888.

Application filed May 19, 1886. Serial No. 202,596. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB VORE ROWLETT, a citizen of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented new and useful Improvements in Lawn-Mowers, of which the following is a specification.

My invention relates to lawn-mowers, and the purpose thereof is to provide novel improvements in mechanism of that class, whereby the knives shall have a continuous uninterrupted cut at all times, even when turning the machine to the right or left.

It is also my purpose to so organize and construct the parts that the drive-wheel shall have great power and speed upon the reel, thereby giving a very light-running machine, while at the same time a large pinion may be used upon the reel-shaft, which produces a powerful leverage on the knives.

It is a further purpose of my invention to dispense with springs of every description in connection with the working or backing ratchet, which is constructed with steel pawl-pins and ratchet-collars; to improve the construction of the adjustable box for the reel-shaft bearings and to render said parts more simple and durable; to render the lower knife adjustable as well as detachable, and to improve the construction of the hoods upon the ends of the driving-wheel spindle, whereby the grass is prevented from catching and clogging on the spindle.

It is my purpose, finally, to provide an improved construction for the attachment of the handle and to dispense with the employment of bolts and springs; to provide an adjustable roller and effect an improved arrangement of the same, and to render the mower in all respects highly practical, durable, and very light running.

My invention consists in the several novel features of construction and combinations of parts hereinafter fully set forth, and definitely pointed out in the claims annexed to this specification.

Referring to the drawings forming part of this application, Figure 1 is a general perspective view of a lawn-mower embodying my invention. Fig. 2 is a central transverse section of Fig. 1. Fig. 3 is an end elevation of

the machine. Fig. 4 is an end view, enlarged, of one of the mower-disks, the driving-wheel and driving-pinion being removed to show the manner of fastening the reel-spindle to its actuating-gear. Fig. 5 is a detail elevation, enlarged, showing the bearings for the reel-spindle. Fig. 6 is a double view in plan and in elevation of the ratchet collar. Fig. 7 is a detail elevation and a detail section, both enlarged, of the reel-shaft pinion with its ratchet, showing the construction of parts and their relative arrangement. Fig. 8 is a detail, enlarged, giving a face and rear view of the cam-collar seated in the face of the pinion actuating the reel shaft. Fig. 9 is a section taken through the end of the reel-shaft, the parts being all in place. Fig. 10 is a double detail face and rear view of the hood-washer upon each end of the driving-wheel spindle. Fig. 11 is an enlarged elevation of the inner face of the end of the frame to which the rear roller is attached. Fig. 12 is a detail section of the reel-shaft bearing. Fig. 13 is a detail perspective of the gib cap, removed; and Fig. 14 is a sectional view of part of a wheel, with countersunk recess and washer, the latter not being cut, but represented in side view.

In the said drawings the reference numeral 1 designates the machine-disks which form part of the rigid frame of the mower. These disks are connected by the bar 2, and they are further stiffened by the shaft of the rotary knife and by the frame carrying the stationary knife, the former being generally denominated the "reel-shaft." Cast with each disk is a rearwardly-projecting arm, 3, to which is fastened the roller 4 and the stationary knife or cutter 5. The roller 4 is carried by two vertical arms, 6, in the lower ends of which the roller-journals 7 have bearing. The upper end of each arm is provided with an elongated slot, 8, which receives a bolt, 9, which is passed through an opening in the rear end of the arm 3. A nut, 10, is then turned upon the end of the bolt and forced against the arm 6, whereby it is held at any point to which it is adjusted. The slots 8 permit a vertical adjustment of the roller within ordinary limits, and in order to increase the range of this adjustment I provide each arm 3 with two bolt-openings, 9<sup>a</sup>, one above the other. By shifting the bolt

from one to the other I may increase the range of adjustment by the distance between the two openings.

Upon each projecting arm 3 is formed a downward projection or shoulder, 11, and these shoulders receive the pivot-bolts 12, which support the stationary knife. These bolts pass through curved arms 13, which rise from the knife-bar 14, to which the ledger-plate or knife 5 is bolted. The upper ends of the curved arms 13 are turned rearward and pass between the ends of oppositely acting set-screws 15 and 16, which are tapped through lugs 17, projecting from the inner faces of the projecting arms 3. From a point immediately below the pivot-bolts 12 the knife-bar 14 is extended horizontally forward, and the blade 5 is attached to the lower face of the bar in the usual manner.

It will be seen that by turning the set screws 15 and 16 the knife-bar and blade or ledger-plate may be lifted upward, and at the same time thrown slightly forward, and this adjustment being by a screw may be made extremely delicate and accurate, while at the same time, as each end of the knife may have a separate adjustment, any slight inaccuracy or inequality in wear may be easily compensated.

At the point where the arms 3 unite with the disks 1 are formed the box-bearings for the journals of the reel-shaft 18. These boxes are preferably cast integral with the other parts of the frame, and consist of a main bearing-chamber and an extension, the former being indicated by the numeral 19 and the latter by 19<sup>a</sup>. A Y-shaped recess is formed in each box and extension to receive a gib-cap, 20. (Shown in Fig. 13.) The tail 20<sup>a</sup> of said gib-cap lies in the line of strain exerted upon the reel-shaft by the driving-gears, and the whole bearing-friction is exerted directly upon the cap. Upon the outer lateral faces of the box are formed two bosses, 21 and 21<sup>a</sup>, one to the rear of the tail of the gib-cap and the other above it and in rear of its upper branch. Through these bosses screws 22 and 22<sup>a</sup> are tapped, the ends of which rest upon the main parts of the gib-cap.

The box-bearings project inward from the disks 1, in order to leave a chamber, 23, in the outer face of the disk, Fig. 4, through which the end of the reel-shaft 18 passes centrally and projects somewhat beyond the outer face of the disk. A pin, 24, passes through the shaft just outside the gib-cap. Upon the shaft and seated in the bottom of the chamber 23 is a ratchet-collar, 25, having upon its inner face depressions or sockets 26, (see Fig. 6,) which open into or communicate with the axial passage in collar 25, through which extends shaft 18. Pin 24, which passes through the shaft, extends into the depressions 26 and locks together the collar and shaft. Upon the outer face of this collar are formed two opposite cam-shoulders, 27, (see Fig. 6,) each having a gradual incline, 28, terminating in shoulder

27, having a plane or face at a right angle to the face of the collar. An annulus, 29, immediately surrounds the shaft, and against said annulus rests the butt or extension 32 of the body of the pinion 30, which drives the reel-shaft.

Turning now to the sectional view, it will be seen that a chamber, 33, is formed in the outer face of the pinion. Through the body of the pinion are drilled holes parallel with the axis of the pinion and penetrating the chamber 33. Into each of these holes is dropped a steel pin, 35, of such length that it may extend nearly flush with the face of the extension 32. The pinion being placed upon the end of the shaft 18, it is pushed into the chamber 23 until its extension 32 bears against the annulus 29 of the ratchet-collar 25, in which position the whole of the toothed periphery of the pinion lies outside the disk in position to engage the drive-wheel. A cam-collar, 36, is placed upon the end of the shaft and pushed into the chamber 33 in the pinion. This cam-collar (shown in Fig. 8) consists of an annulus, 36, having upon opposite sides double cam-inclines 37, which meet and form an apex, 38, on each side of the axial opening, said apexes being exactly opposite each other. Upon its opposite face, which is the outer face when the collar is in position, the edges are beveled off and cotter-notches 38<sup>a</sup> are formed to receive a cotter-pin, 39, Fig. 9. This pin passes through the shaft and locks the cam-collar thereon, whereas the pinion itself is loose, save as it is connected with the shaft through the pins 35, ratchet-collar, and pin 24. The pinion is loose upon the shaft 18; but its revolution in a forward direction brings pins 35, by means of the inclined faces 37 of the cam-collar 36, which is keyed to shaft 18, into engagement with faces 27 of the collar 25, which collar is keyed to the shaft, as before specified, and said shaft is then revolved by the pinion. Cam collar 36 is keyed to the shaft, so that the apexes 38 will be in a plane passing near and parallel to the shoulders 27.

The arrangement of the parts, as above described, is such that the revolution of the pinion will cause the ends of the steel pins to impinge upon the cam-inclines 37 of the cam-collar, and will thereby drive said pins inward to the full throw of the cam-collar, and it will be but an instant before the inner ends of said pins are swept against the square shoulders 27 of the ratchet-collar. When the machine is running forward, this engagement will be made, and when once made it will be retained, the pins acting as pawls; but when the mower is backed the pins will simply ride over the inclines 28 without engaging with the cam-shoulders 27. In this manner I effect the ratchet connection without springs. I give a truly positive action to every part, and the devices are not only extremely simple and durable, but by providing each end of the reel-shaft with such connection the rotary knife will have continuous motion at all times when

either main drive-wheel is in motion—as, for example, when turning a corner or turning around.

The drive-wheels 40 each consists of a cast-metal shell having a central inwardly-projecting box, which receives the hollow spindle 42 on the disk. Each wheel is provided with an internal gear, 43, and a corrugated periphery, 43<sup>a</sup>. Upon the outer projecting end of each hollow spindle 42 is placed a hood-washer. (Shown in detail in Fig. 10.) This washer consists of a circular plate, from which projects a cap, 44, covering the end of the hollow spindle. Upon opposite sides of the cap, down close to the plate 45, I form openings 46 to receive the cotter-pin 47, and upon each side of each opening are formed flanges 48, which protect the ends of the cotter-pin.

In the outer face of the drive-wheel and surrounding the spindle 42 a recess, 49, is formed, having a size and depth which are just sufficient to receive the hood-washer, and leave the surfaces flush and the joints tight. By this construction all danger of grass catching in the drive-wheels and clogging on the outside of the machine is effectually avoided, both flanges 48 and the combination of the countersunk recess with the washer contributing to this end. A broad external bearing for the drive-wheel is provided by the washer secured to the spindle.

A hood-washer has heretofore been used to cover the end of the shaft in a lawn-mower, but said washer rested against the face of the wheel. Such construction would admit grass or other matters to be drawn in between the washer and wheel, and it does not provide a bearing for the wheel around the periphery of the washer, as does my improvement.

Nuts and hood-washers have been screwed upon the ends of wagon axles outside the hubs and in countersunk recesses in said hubs, the latter being provided on their outer ends with bands, and the claims herein in this respect are limited to the wheels of mowers having no hubs or bands.

Upon each disk, at or near the edge on its inner face, is cast a strap, 50, and upon the face of said disk, at a point between said strap and the axis of the disk, is formed or attached a stud-pin, 51, the construction and arrangement of one disk being in these respects the duplicate of the other. The straps 50 receive the arms 52 upon the end of the wooden handle 53. These arms are of metal, preferably in the form of a flat plate, which may be bolted to the handle. In the extremity of each is formed an opening which receives the stud 51. The edge of the disk is cut away underneath the strap, as indicated at 57, (see Fig. 4,) and to a distance sufficient to allow an arm to be inserted at an inclination that will permit pin 51 to enter the hole near the end of said arm. The arms when bolted to the handle 53 cannot escape from the pins. Each pin is secured to a disk on its inner side in a line extending from the longitudinal center of a strap to the axis

of the disk and between said strap and axis. By this construction the handle is rendered easily and quickly detachable, and at the same time the parts when in place are securely united.

The rotary cutter is mounted upon the reel-shaft 18, and consists of spiral blades 55, bolted upon arms 56, which at the ends are mounted upon the reel-shaft.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a lawn-mower, the combination, with the driving-wheels and the shaft, said wheels having each a central bearing for the spindle or shaft, of a countersunk recess surrounding said bearing upon the exterior face of the wheel, a hood-washer having a circular plate seated in said recess and provided with a cap inclosing the end of the shaft and having an opening for a cotter-pin formed transversely through the cap, external flanges being formed upon each side of the opening to protect the head and end of the cotter-pin, substantially as specified.

2. In a lawn-mower, the combination, with the reel shaft, of a ratchet-collar keyed to said shaft near its end, driving-pinions loose thereon and provided with pawl-pins arranged in bearings in the body of the pinion parallel with its axis, and a cam-collar keyed to the shaft at each end outside the pinion, and having upon its inner face cam projections which project the pawl-pins inward, substantially as specified.

3. In a lawn-mower, the combination, with the reel-shaft, of a pinion loose upon the end thereof, a ratchet-collar upon one side of said pinion, a cam-collar upon the other side, and steel pawl-pins lying in bearings in the body of the pinion and thrown by the cam-collar into engagement with the ratchet-collar, both said collars being keyed to the shaft, substantially as specified.

4. In a lawn-mower, the combination, with a ratchet-collar having opposite inclines terminating in square cam-shoulders upon one of its parallel faces, of a pinion loose on the shaft, pawl-pins arranged in the body of said pinion to move toward the ratchet-collar and from it, a cam-collar having two double inclines forming opposite apexes, said cam-collar being seated in a recess in the outer face of the pinion, and means for keying both collars to the shaft, substantially as specified.

5. In a lawn-mower, the combination, with the reel-shaft, of a loose pinion, pawl-pins movable therein in lines parallel to the axis, a ratchet-pinion having radial recesses which engage with a pin through the shaft, and a cam-collar upon the opposite side of the pinion, having a cotter-pin engaging with the shaft and lying in recesses in the outer face of the collar, substantially as specified.

6. In a lawn-mower, the combination, with the disks cut away at the edge under the straps, of said straps cast or formed on the inner face

of the disks, studs secured to said disks on their inner faces in a line passing through the axis of the disks and through the straps, and the arms of the handle, whereby said arms  
5 may be inserted under the straps and placed over the studs preparatory to securing the arms to the handle, substantially as specified.

7. In a lawn-mower, the combination, with the disks of the frame cut away at the edge  
10 under the straps, of inwardly-projecting straps and studs on the inner face of the disks, said studs being placed between said straps and the axial center of the disks, as set forth, and a  
15 thereto, said arms each engaging or embracing a stud by means of a suitable aperture in the arm, substantially as specified.

8. In a lawn-mower, the combination, with

loose driving gears or pinions, of movable pins or pawls working in parallelism with the axes  
20 of the pinions and located between the faces and the axes of said pinions, said pins or pawls each engaging at one end with a ratchet and at the other end with a two faced cam, whereby  
25 the pin or pawl is made to engage with a ratchet when the pinion moves in one direction, and is permitted to pass over a ratchet when moved in the opposite direction, substantially as specified.

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

JACOB VORE ROWLETT.

Witnesses:

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