

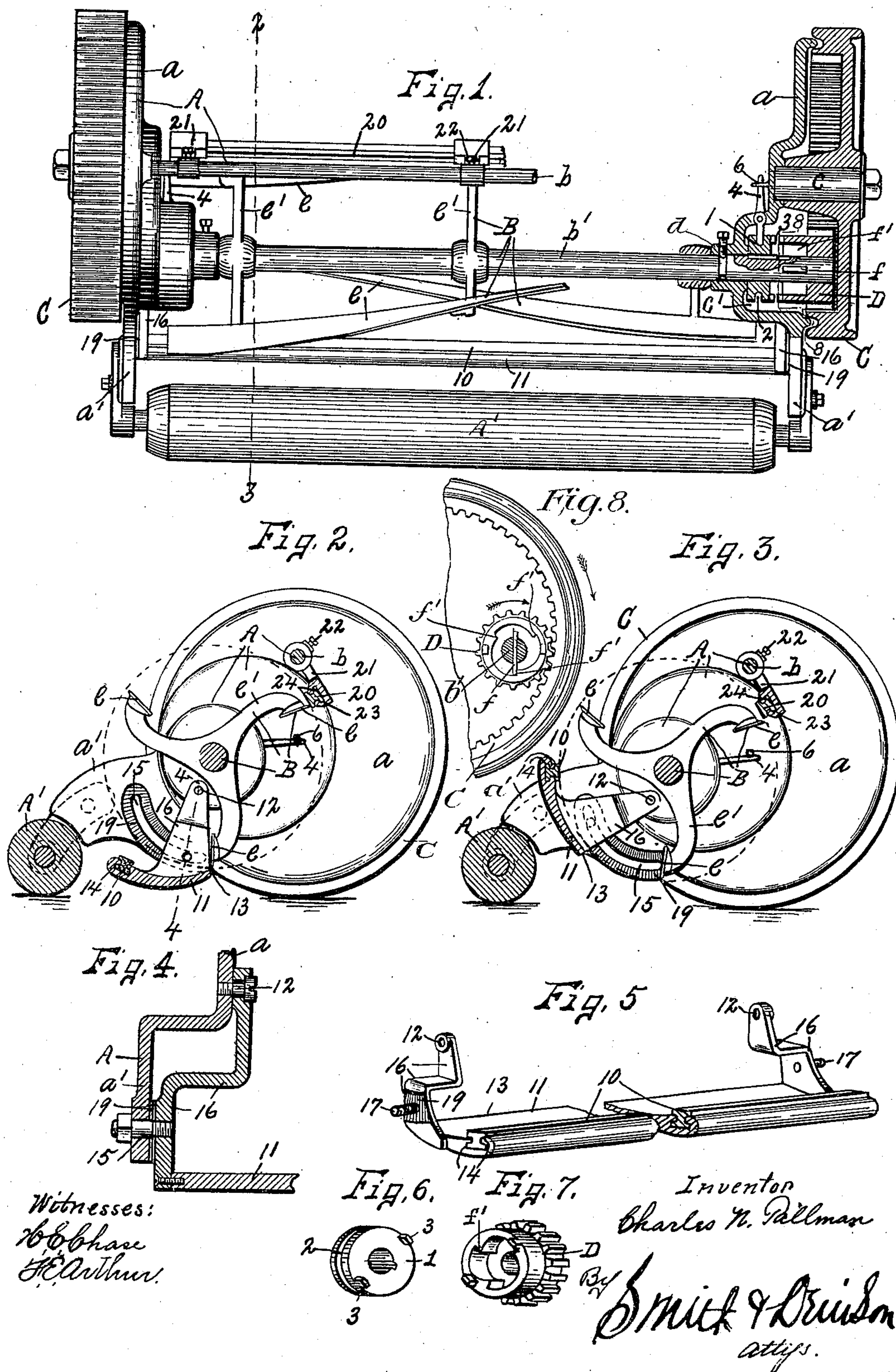
No. 684,128.

Patented Oct. 8, 1901.

C. N. TALLMAN.
LAWN MOWER.

(Application filed Sept. 10, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

CHARLES N. TALLMAN, OF SYRACUSE, NEW YORK.

LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 684,128, dated October 8, 1901.

Application filed September 10, 1900. Serial No. 29,513. (No model.)

To all whom it may concern:

Be it known that I, CHARLES N. TALLMAN, 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.

This invention relates to improvements in lawn-mowers, and particularly to the rotary-cutter class, the object being to provide means whereby the cutter-knives may be speedily and uniformly ground or sharpened without removing or displacing the knives or other parts of the machine.

To this end the invention consists in the combination, construction, and arrangement of the component parts of a lawn-mower, as hereinafter fully described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a top plan view, partly in section, of a portion of a lawn-mower embodying my invention, showing particularly the cutting and driving mechanism and the means for sharpening the cutter-knives. Figs. 2 and 3 are sectional views taken on line 2 3, Fig. 1, the knife-sharpening mechanism being shown in its inoperative position in Fig. 2 and as moved to its operative position in Fig. 3. Fig. 4 is a sectional view taken on line 4 4, Fig. 2. Fig. 5 is a perspective view of the lower cutting-bar frame and a grinding-bar mounted thereon. Figs. 6 and 7 are isometric views showing, respectively, one of the driving-pinions for rotating the cutter when the lawn-mower is moved in one direction and a clutch member for engaging the driving-pinion and rotating the cutter when the mower is moved into the reverse direction. Fig. 8 is a sectional view taken on line 8 8, Fig. 1, showing the cutter-shaft and pinion and the sliding clutch member.

Similar reference characters indicate corresponding parts in all the views.

A represents the frame of an ordinary lawn-mower, provided with a rotary cutter B and suitable driving mechanism for rotating the cutter B, all of which parts may be of any desired form, size, or construction.

The frame A consists, as seen in the draw-

ings, of oppositely-arranged substantially-cylindrical heads *a*, having rearwardly-extending arms *a'*, to which is adjustably secured an ordinary ground-roller A'. The cylindrical portions *a* are united to each other by a transverse bar *b* and are provided with laterally-projecting studs *c* for receiving portions of the driving mechanism, presently described, said cylindrical portions being also provided with recesses *c'*, extending inwardly from their outer faces, and journal-bearings *d*, extending inwardly from said recesses.

The cutter B may be of any desired form or construction, and preferably consists of a shaft *b'* and spirally-arranged lengthwise-cutting knives *e*, suitably secured to said shaft by arms *e'* in the usual manner for such construction of cutter-heads. The opposite ends of the shaft *b'* are journaled in the bearings *d* and are provided with transverse slots for receiving sliding clutch members *f*, which are reciprocally movable in said slots for a purpose hereinafter described.

The driving mechanism previously referred to, as seen in Fig. 1, usually consists of the ordinary traction-wheels C, pinions D, and clutch members 1. The traction-wheels C may be of any desired construction, are journaled on the studs *c*, and are provided with internal gears for driving the pinions D. These pinions are adapted to mesh with the internal gears of the wheels C, are loosely mounted on the opposite ends of the shaft *b'*, and are provided with recesses extending inwardly from their inner ends, the walls of said recesses being provided with clutch-teeth adapted to detachably interlock with the clutch members *f* of the shaft *b'* for rotating the cutter-head when the lawn-mower is moved forwardly and for preventing rotation of said cutter-head when the lawn-mower is moved in the opposite direction. The clutch members 1 serve the purpose of rotating the cutter-head backwardly when the wheels C are rotated rearwardly, as in rolling the mower rearwardly, and are used in connection with the grinding or sharpening mechanism presently described. As seen in Figs. 1, 6, and 7, these clutch members generally consist of disks, which are splined or feathered on the opposite ends of the shaft *b'* in proximity to

the pinions D, are movable lengthwise on the shaft toward and away from said pinions, and are each provided with annular grooves or shoulders 2 and laterally-projecting teeth 3, adapted to engage similar teeth formed on the adjacent end faces of the pinions D. The means for moving the clutch members into and out of engagement with the pinions D preferably consist of hand-levers 4, having their intermediate portions pivoted to the heads *a* of the frame A and their inner ends adapted to engage the opposite walls of the grooves 2. The outer end of the lever is adapted to be engaged by the hand for rocking said lever, and thereby forcing the clutch members 1 into and out of engagement with the pinions D, said lever being held in its adjusted position by any suitable means, as a catch 6.

It is apparent from the foregoing description that when the traction-wheels C are rotated forwardly the cutter-head is also rotated in the same direction by means of the clutch members *f* and the shoulders *f'* of the pinions D and that when it is desired to rotate the cutters in the opposite direction the clutch members 1 are moved into engagement with the pinions D and the wheels C are rotated rearwardly, it being understood that the clutch members *f* and shoulders *f'* permit the rearward rotation of the wheels C and pinions D independently of the shaft *b'* when the clutch members 1 are out of operative engagement with the pinions D.

The grinding and sharpening mechanism previously mentioned may be of any desired construction or material, but preferably consists of a grinding-bar 10 of emery or equivalent material, which is mounted upon the frame in such manner as to be readily movable in a plane intersecting the path of movement of the cutting edges of the knives.

As seen in the drawings, and particularly in Figs. 2 and 3, I provide the frame A with a movable cutter-bar 11, which is pivoted at 12 to opposite heads *a* of the frame A and having its cutting edge 13 movable in an arc intersecting the path of movement of the cutting edges of the knives *e*. This cutter-bar 11 is usually formed of substantially the same length as the cutting edges of said cutters and is provided with lengthwise grooves and shoulders 14 for receiving the grinding-bar 10, said grinding-bar being also provided with lengthwise grooves and shoulders, which are adapted to interlock with the grooves and shoulders 14 for permitting the grinding-bar to be removed when desired. This grinding-bar, being mounted upon the cutter-bar 11, is movable with said bar into and out of the path of movement of the cutting edges of the knives *e*. In order to firmly hold the cutter-bar 11 in either of its adjusted positions, I provide the opposite heads *a* of the frame A with slots 15, which are arranged substantially concentric with the pivots 12 and usually extend through the arms *a'*.

The cutter-bar 11 is usually secured to the lower end of suitable ears 16, which are provided with studs or bolts 17, projecting through the slots 15 and having their outer ends arranged to engage the outer faces of the arms *a'* for clamping the bar 11 in its adjusted position. The adjacent faces of the ears 16 and arms *a'* are provided with substantially radial serrations 19, preferably arranged on opposite sides of the slots 15 and adapted to interlock with each other for additionally holding the cutter-bar in its adjusted position.

It will be understood from the foregoing description that when desired to adjust the cutting edge of the cutter-bar to the cutting edges of the rotary knives it is simply necessary to release the clamps 17 and move the cutter-bar forwardly the required distance and then reclamp the same in position.

In using my improved grinding or sharpening mechanism I preferably rotate the cutter-knives rearwardly against the grinding-bar 10 when said bar is adjusted to the position seen in Fig. 3, although it is apparent that the clutch members 1 may be dispensed with, if desired, and the cutters rotated forwardly in the usual manner into contact with the grinding-bar 10. In order to grind the knives more speedily and uniformly, I provide a second grinding-bar 20, mounted upon arms 21, which are adjustably secured by suitable set-screws 22 to the transverse connecting-bar *b* of the frame A, as seen in Figs. 1, 2, and 3, this second grinding-bar being of substantially the same form and size as the bar 10 and is held in position by interlocking shoulders 23 and 24, similar to the shoulders and grooves of the grinding-bar 10 and cutter-bar 11.

In the operation of my invention when desired to sharpen the knives the clutch members or sections 1 are forced into engagement with their respective pinions D by means of the hand-levers 4, and one or both of the grinding-bars 10 and 20 are moved into the path of the cutting edges of the knives *e* and clamped into position by the clamping-bolts 17 and 22. The wheels C are then rotated rearwardly for rotating the cutter-knives in the same direction against the grinding-bars 10 and 20. These grinding-bars are formed of substantially the same length as the cutting edges of the knives *e* and serve to uniformly and effectively grind or sharpen the knives by simply moving the lawn-mower backwardly along the lawn or other support.

The operation of my invention will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that the essential elements of my invention are to provide a grinding-bar upon the frame of a lawn-mower, which bar may be moved into and out of the path of movement of the cutting edges of the knives, and to also provide means for rotating the cutter-head rearwardly by

the rearward movement of the lawn-mower for forcing the cutting edges of the knives across the grinding-face of the grinding-bar, and that considerable change may be made
5 in the detail construction and arrangement of the parts of a lawn-mower for attaining these results without departing from the spirit of this invention. Therefore I do not limit myself to the precise construction and
10 arrangement shown and described.

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

1. A lawn-mower comprising a rotary cutter, means for automatically rotating the cutter as the mower is moved in one direction,
15 and additional means movable into and out of engagement with the former means for ro-

tating the cutter as the mower is moved in the reverse direction. 20

2. A lawn-mower comprising a rotary cutter, means for automatically rotating the cutter as the mower is moved in one direction, and additional means movable into and out
25 of engagement with the former means for rotating the cutter as the mower is moved in the reverse direction, and a grinding-bar movable into and out of the path of movement of the cutting edges of the cutter for
30 the purpose described.

In witness whereof I have hereunto set my hand this 4th day of September, 1900.

CHARLES N. TALLMAN.

Witnesses:

H. E. CHASE,
MILDRED M. NOTT.