

A. HILL.  
LAWN MOWER.

Patented Mar. 22, 1898.

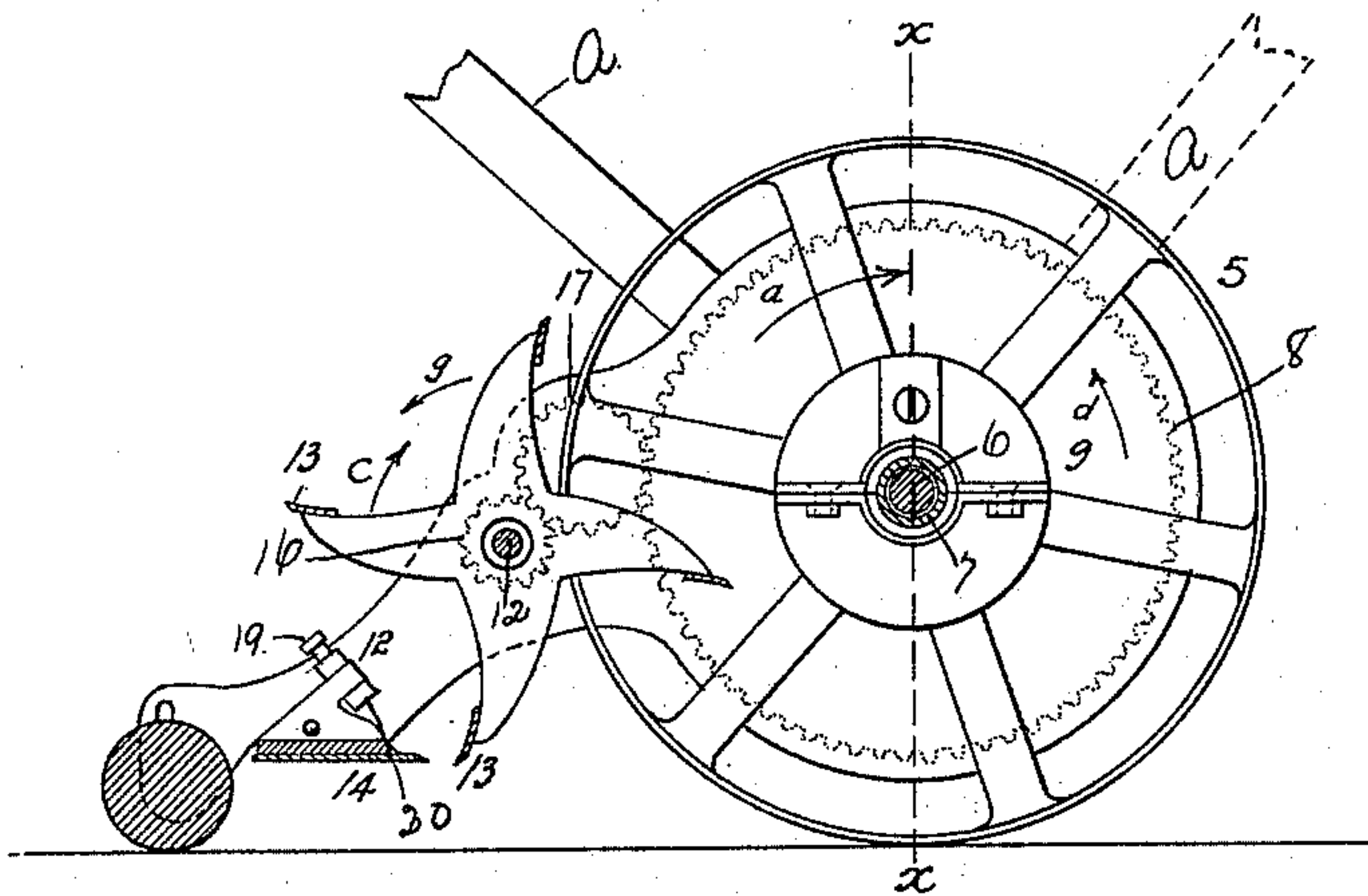


FIG. 1

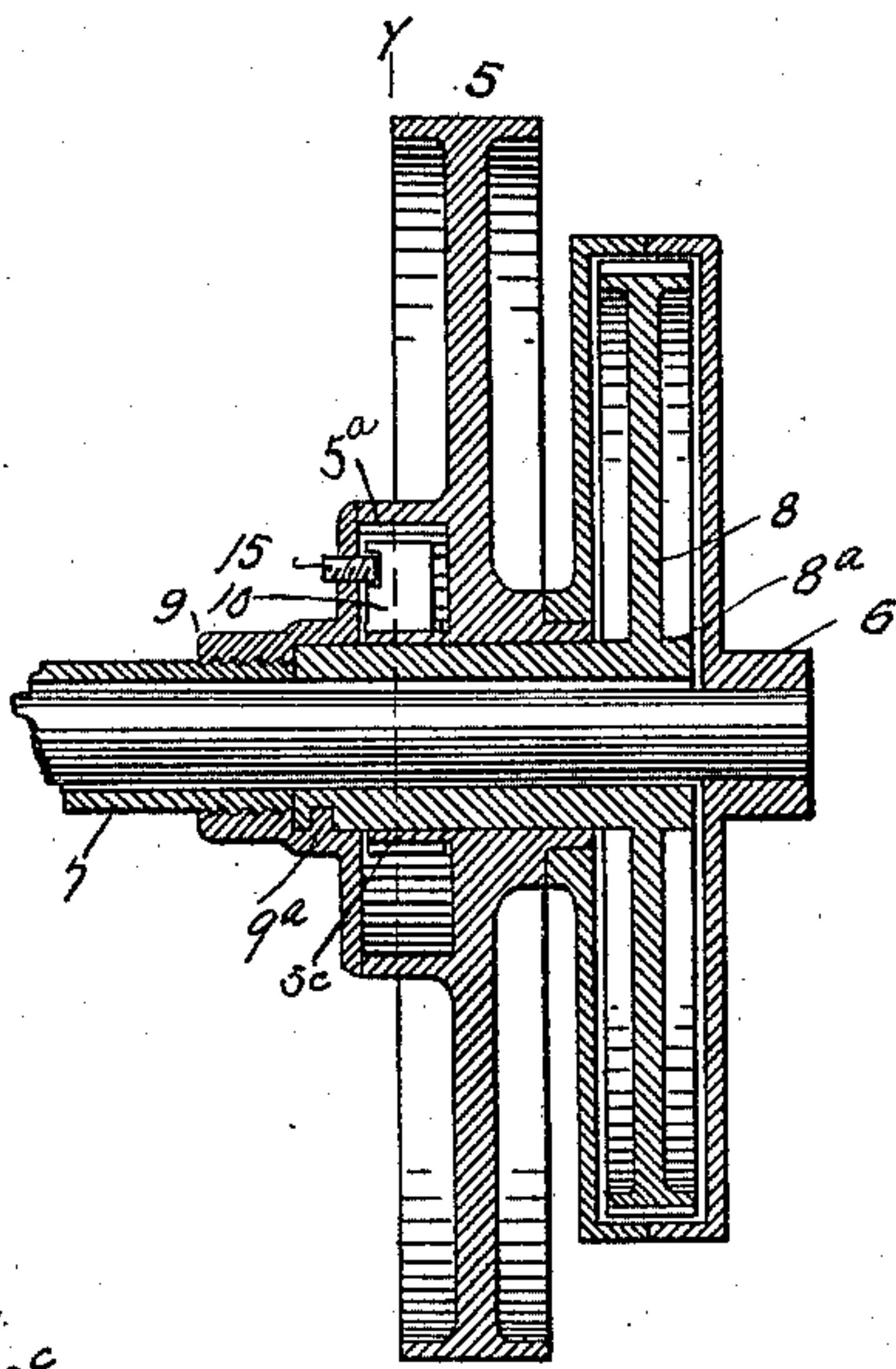
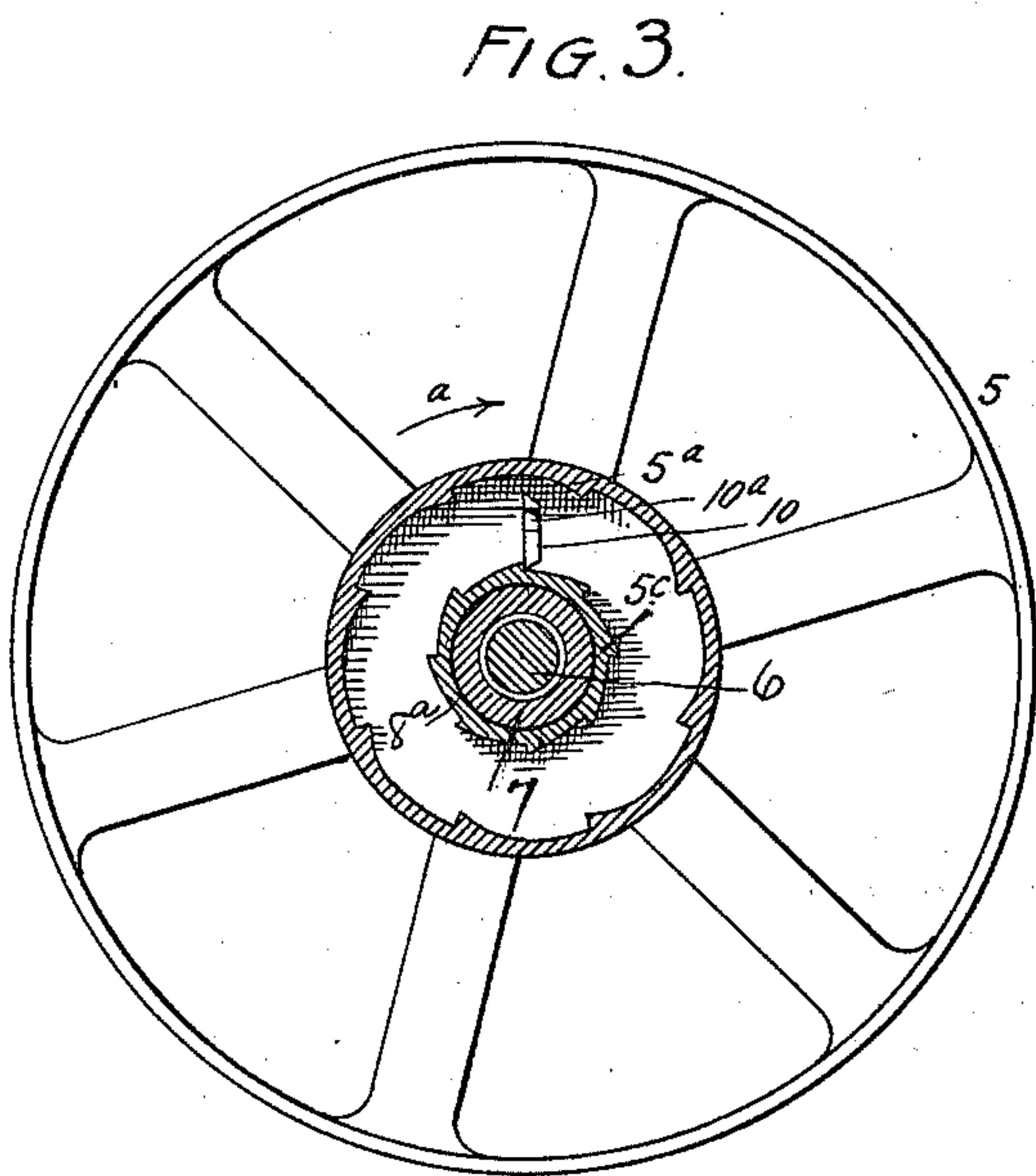


FIG. 2.

FIG. 5

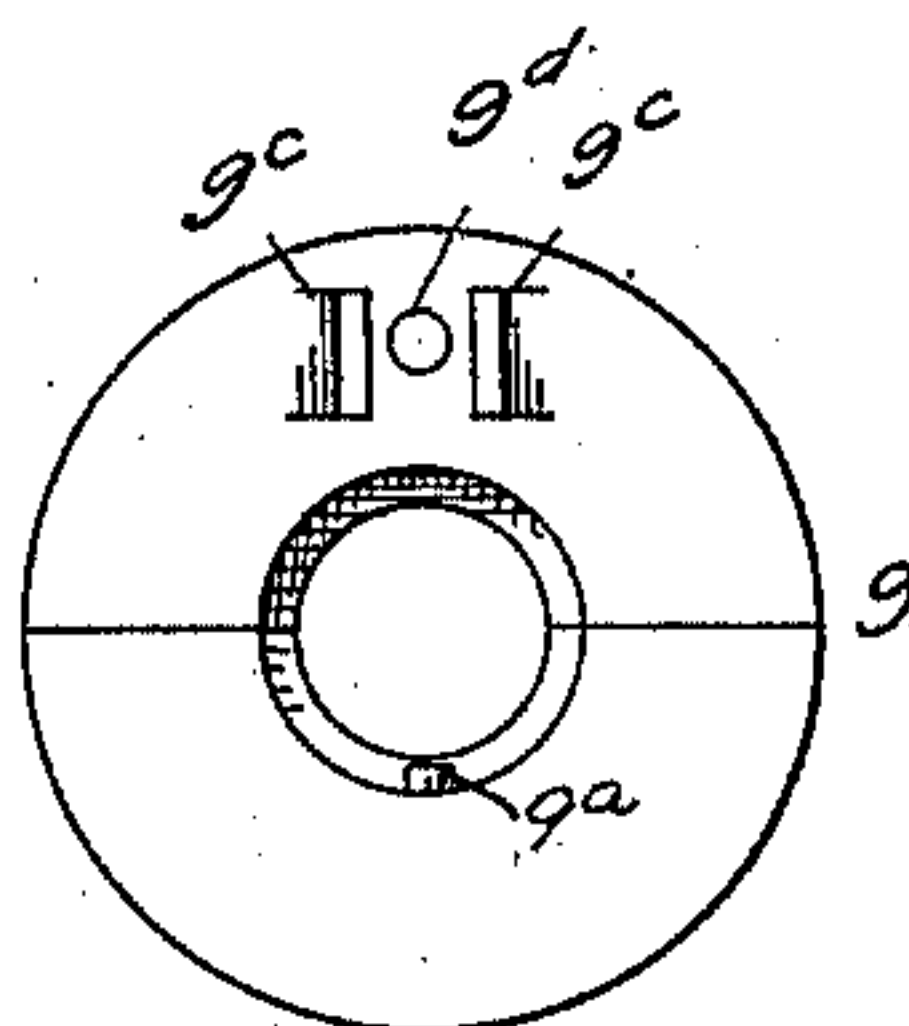
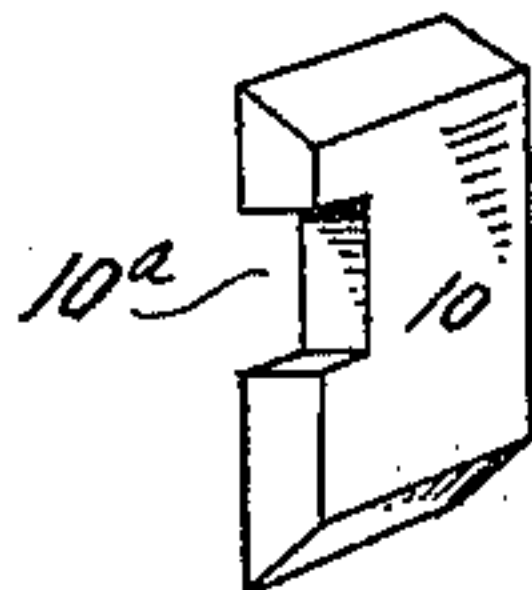


FIG. 4.

Witnesses  
J. J. Rolland  
Edith Kimworth.

Inventor  
Alfred Hill.

By his Attorney



# UNITED STATES PATENT OFFICE.

ALFRED HILL, OF DENVER, COLORADO, ASSIGNOR OF ONE-HALF TO  
ROBERT B. GALBREATH, OF SAME PLACE.

## LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 600,913, dated March 22, 1898.

Application filed August 14, 1897. Serial No. 648,298. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED HILL, a citizen of the United States, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Lawn-Mowers, of which the following is a specification.

My invention relates to improvements in lawn-mowers; and my object is to facilitate the sharpening of the cutter-blades.

The class of mowers to which my improvement is applicable is set forth in United States Letters Patent No. 208,788, and its construction will be described somewhat in detail in this specification in order that my improvement may be clearly understood. In this class of machines the cutting of the grass is effected through the instrumentality of knives mounted on a rotatable support and cooperating with a stationary knife mounted on the framework of the machine. When the knives become dull, they are sharpened by turning the rotary knives in a direction opposite their movement when in use, whereby they are brought into sharpening engagement with the stationary knife. Heretofore this rotation has been effected in machines of the construction set forth in the aforesaid patent by attaching a crank to the spindle of the rotary cutters and turning it by hand in the direction stated, since when the rotation of the ground-wheels is reversed the spindle carrying the rotary knives does not rotate.

My improvement consists in fastening the pawl which engages the ratchets of each ground-wheel in such a position that the rotary cutters or knives will be operated when the movement of the machine is reversed. By means of this improvement the knives may be sharpened in a small fraction of the time required by the old method and much more easily.

Having thus briefly outlined the nature of my invention, I will proceed to describe the same in detail, reference being made to the accompanying drawings, in which—

Figure 1 is a vertical section taken through a lawn-mower equipped with my improvements. Fig. 2 is a section taken on the line *x x*, Fig. 1. Fig. 3 is a section taken on the line *y y*, Fig. 2, looking toward the right. Fig. 4 shows the inner face of one of the pawl-holders. Fig. 5 is a perspective view of one

of the pawls shown in detail and on a larger scale.

Similar reference characters indicating corresponding parts in the views, let the numeral 5 designate the ground-wheels of the machine, one only being shown. Each of these wheels is provided with an outer ratchet-rim 5<sup>a</sup> and an inner ratchet-rim 5<sup>c</sup>. Mounted on the framework of the machine is a shaft 6, surrounded by a driving-tube 7. The master-gear 8 is provided with a sleeve 8<sup>a</sup>, upon which the adjacent ground-wheel is journaled. This sleeve is connected with the driving-tube 7 by the pawl-holder 9, which consists of a two-part collar fastened to the driving-tube extremity by screws connecting the two clamping parts. The portion of the pawl-holder which engages the tube 7 is threaded to engage the corresponding threads on the tube extremity. The portion of the collar which engages the sleeve 8<sup>a</sup> is provided with a lug 9<sup>a</sup>, which engages a counterpart socket formed in the sleeve.

One part of the clamping pawl-holder 9 is provided on its inner surface with a pair of lugs 9<sup>c</sup>, between which the pawl 10 is located. When the parts are assembled, this pawl is located between the two ratchet-faces of the rims 5<sup>a</sup> and 5<sup>c</sup>. These ratchet-faces are located adjacent the extremities of the pawl and are engaged thereby. They are so constructed and arranged that when the machine is in use and the ground-wheels are moving in the direction indicated by the arrow *a* the driving-tube 7 and the gear 8 are actuated. Fast on the spindle 12, carrying the knives 13, is a pinion 16. Between this pinion and the master-gear 8 is located a gear 17, which meshes with both the pinion and the master-gear. Hence when the gear 8 is rotated in the direction of the arrow *a* in Fig. 1 the knives 13 are rotated in the direction indicated by the arrow *c*. This is the normal action of the machine when in use.

The pawl 10 acts by gravity when my improvement is not in use. When the pawl is above the center of motion, it engages the ratchet 5<sup>c</sup>. When it is below the center of motion, it engages the ratchet 5<sup>a</sup> of the ground-wheel. In either case the gear 8 is actuated when the ground-wheel is turned in the direction indicated by the arrow *a*. When, however, the ground-wheels are rotated in the opposite direction, or in the direction in-



indicated by arrow *d*, the pawl extremities slide over the ratchets 5<sup>a</sup> and 5<sup>c</sup> and the gear 8 and its connections are not actuated.

My improvement consists in locking the pawl in engagement with one of the ratchet-faces, whereby when the ground-wheels are rotated in the direction indicated by arrow *d* the rotating knives are moved in a corresponding direction, or in the direction indicated by arrow *g*, for the purpose of sharpening the knives. In this case the rotary knives 13 and the stationary knife 14 are ground by contact with each other. The manner of fastening the pawl 10 in engagement with the ratchet-face is immaterial, and it must be understood that I do not limit the invention to the specific construction shown, as I am aware that the same result may be accomplished by other means.

As shown in the drawings, the pawl 10 is provided with a recess 10<sup>a</sup>, formed in one of its edges intermediate the bevel-faces. The pawl-holder 9 is provided with a threaded aperture 9<sup>d</sup>, registering with the said recess in the pawl when the latter is in the proper position. In the aperture 9<sup>d</sup> is inserted a set-screw 15, which when screwed into the recess 10<sup>a</sup> of the pawl locks the latter in the position, for instance, shown in Fig. 3, so that when the ground-wheels 5 turn in the direction indicated by arrow *d* the pawl cannot slip over the teeth of the ratchet-rim 5<sup>c</sup>. Hence the gear 8 is turned in the direction indicated by arrow *d* and the knives 13 in the direction indicated by arrow *g* for the purpose stated.

In this style of lawn-mower both ground-wheels are provided with the ratchet-rims 5<sup>a</sup> and 5<sup>c</sup>, a pawl-holder 9 being attached to both extremities of the driving-tube and carrying a pawl 10. I provide both pawls with a recess 10<sup>a</sup> and both pawl-holders with set-screws 15. As these two pawl-holders and pawls are substantially duplicates, I have not considered it necessary to show both in the drawings. Hence I have only illustrated the side of the machine carrying the gears 8, 16, and 17. These gears are completely incased when the parts are assembled. Hence they are shown by dotted lines in Fig. 1.

When it is desired to sharpen the knives of the machine, the stationary knife 14 is adjusted by means of set-bolts 19 and 20 in order to bring the knives 13 and 14 in suitable proximity for the purpose. The stationary knife is mounted on a rocking holder whose position is regulated by the set-bolts, whereby it is made to occupy any desired position with reference to the rotary knives. The set-screws 15 are then adjusted to engage the recesses 10<sup>a</sup> of the pawls 10. The ground-wheels are then actuated in the direction indicated by the arrow *d*. This movement of the machine actuates the rotary knives in the direction indicated by the arrow *g*, whereby the rotary and stationary knives are both sharpened.

In moving the machine for sharpening purposes the handle A should be thrown to the position shown in dotted lines in Fig. 1. This action will raise all the mechanism, except the ground-wheels, from the ground, since the handle is fastened to the frame, so that the latter moves therewith, and the machine is then pushed in the same manner as when operated for cutting purposes, the result being, however, that the wheels are moved in the opposite direction. It is evident that the sharpening of the knives may be very quickly and easily accomplished by the use of my improvement herein set forth. During the operation of sharpening the knives a paste composed of oil and powdered emery should be spread upon the stationary knife.

Having thus described my invention, what I claim is—

1. In a lawn-mower, the combination with a suitable driving-shaft, a ground-wheel provided with a ratchet-face, a stationary knife, rotary knives coöperating with the stationary knife, a pawl adapted to engage the ratchet-face of the ground-wheel, a holder mounted on the driving-shaft and carrying said pawl, and gears for transmitting motion from the driving-shaft to the rotary knives, of means mounted on said holder for locking the pawl in engagement with the ratchet-face of the ground-wheel, whereby the rotary knives are actuated when the movement of the ground-wheel is reversed.

2. In a lawn-mower, the combination of a driving-shaft, ground-wheels, one at least of which is provided with a ratchet-face, a stationary knife, rotary knives coöperating with the stationary knife, gears for transmitting motion from the driving-shaft to the rotary knives, a pawl adapted to engage the ratchet-face of the ground-wheel, a pawl-holder fast on the driving-shaft, and a set-screw mounted on the pawl-holder for locking the pawl in engagement with the ratchet-face of the ground-wheel.

3. In a lawn-mower, the combination of a driving-shaft, ground-wheels, one of which at least is provided with a ratchet-face, rotary knives, a stationary knife coöperating with the rotary knives, gears for transmitting motion from the driving-shaft to the rotary knives, a pawl-holder fast on the driving-shaft, a pawl carried by said holder and adapted to engage the ratchet-face of the ground-wheel, said pawl being provided with a recess, and a set-screw mounted on the pawl-holder and adapted to enter the recess of the pawl, whereby the latter is locked in engagement with the ratchet of the ground-wheel.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

ALFRED HILL.

Witnesses:

THEODORE H. THOMAS,  
B. T. HARRISON.