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L. E. BAKER.

RATCHET MECHANISM FOR LAWN MOWERS.

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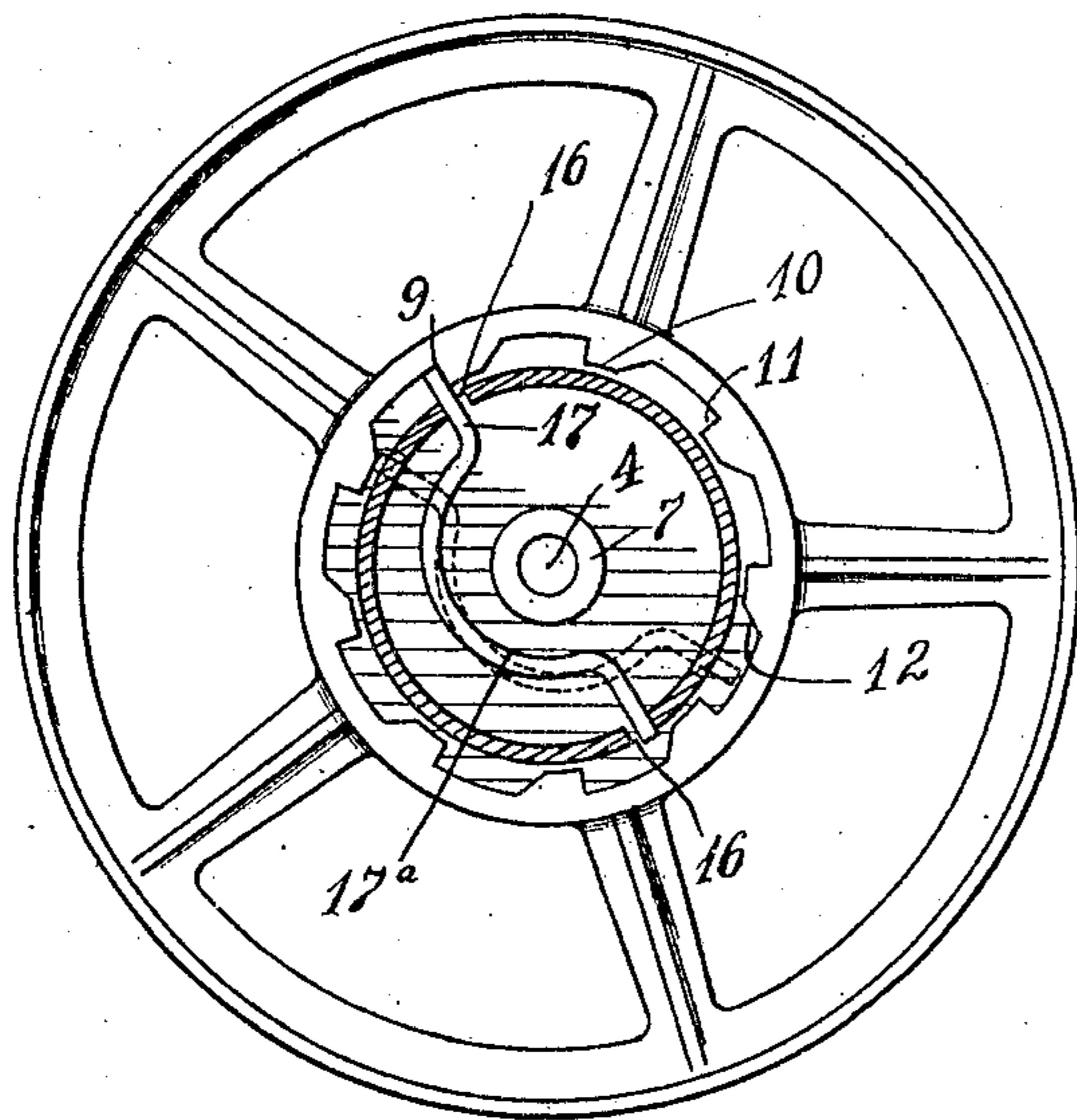


FIG. 2

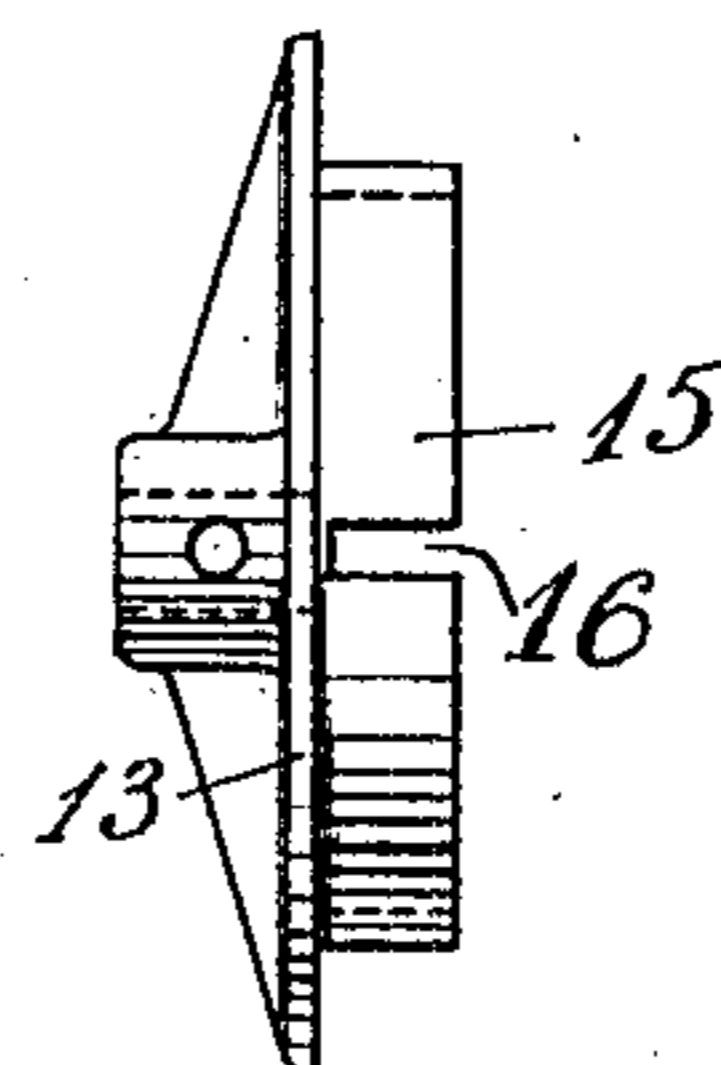


FIG. 3

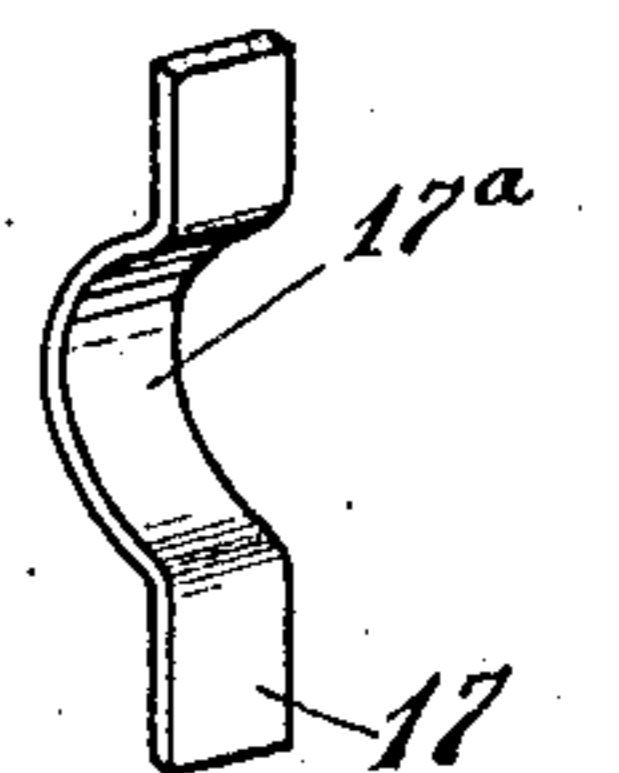


FIG. 4

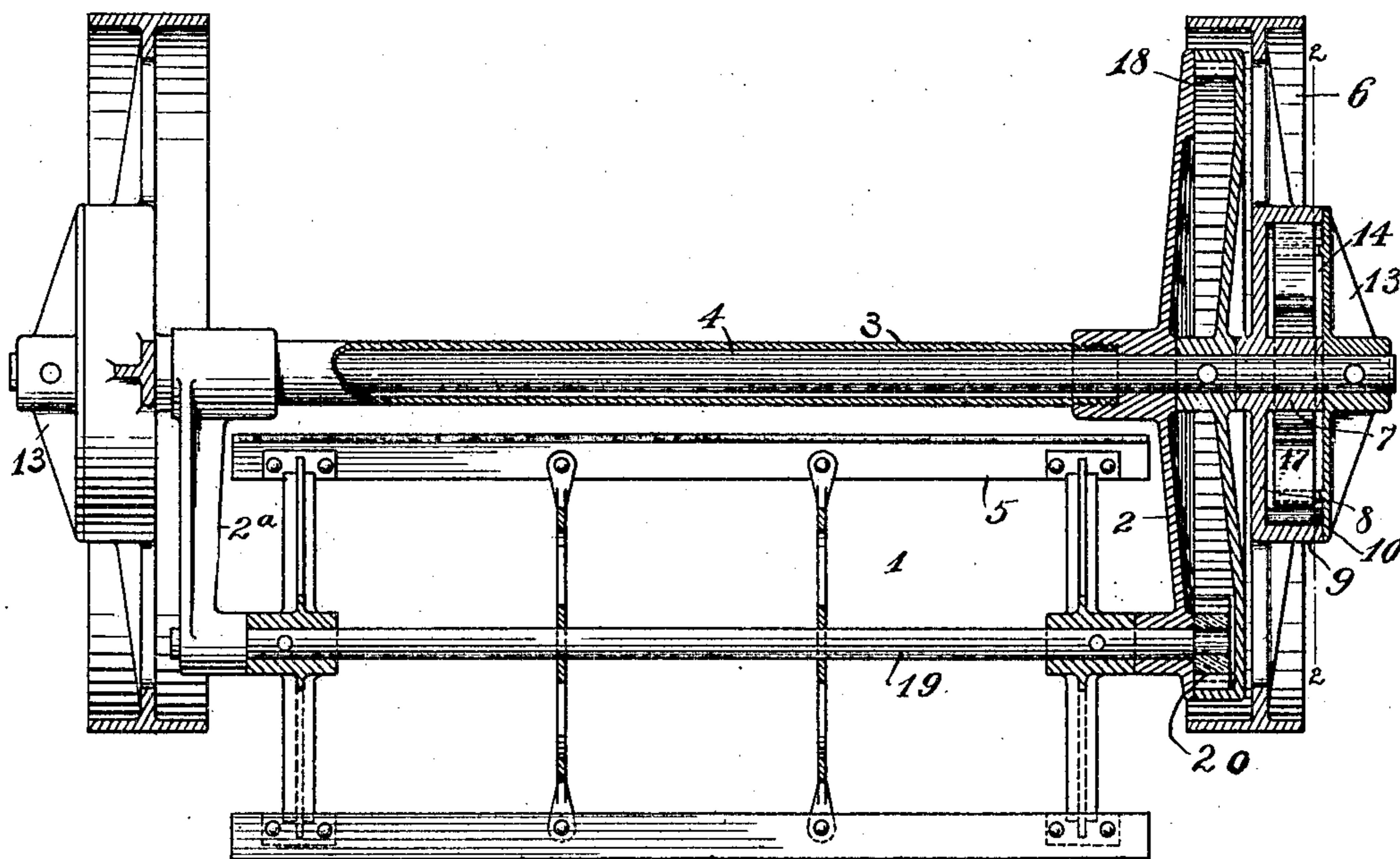


FIG. 1

WITNESSES

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# UNITED STATES PATENT OFFICE.

LINNAEUS E. BAKER, OF CLEVELAND, OHIO.

## RATCHET MECHANISM FOR LAWN-MOWERS.

No. 844,844.

Specification of Letters Patent.

Patented Feb. 19, 1907.

Application filed April 2, 1906. Serial No. 309,296.

*To all whom it may concern:*

Be it known that I, LINNAEUS E. BAKER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Ratchet Mechanism for Lawn-Mowers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

My invention relates to driving mechanism for the reel or rotary frame which carries the revolving knives of lawn-mowers, and more particularly to the clutch mechanism interposed between the drive-wheel and the reel-operating shaft, whereby a particularly simple and effective construction is provided for causing the rotation of the reel or frame when the lawn-mower is moved ahead and to break such connection when the lawn-mower is moved in a backward direction, enabling the drive-wheels to be revolved in the reverse direction without operating the wheel, and to provide a construction permitting the wheels to revolve at different velocities, as when driving the machine in a curved path.

The general objects of the invention are to provide means whereby on starting the mower ahead the motion of the drive-wheel may be transmitted immediately to the reel, thereby dispensing with lost motion, and to accomplish this result by means of a simple and inexpensive construction.

The invention may be defined generally as consisting of the combinations of elements for the purposes described embodied in the claims hereto annexed.

In the drawings, Figure 1 represents a longitudinal sectional plan view of so much of a lawn-mower as is necessary to illustrate the application of my invention thereto, some of the parts being shown in elevation. Fig. 2 represents a transverse section through the hub of the drive-wheel, showing the pawl in place, the section being taken on the line 2-2 of Fig. 1. Fig. 3 represents a side elevation of the end cap for the hub, and Fig. 4 is a detail in perspective of the pawl.

1 designates generally the frame of a lawn-mower, said frame comprising the sidemembers 2 2<sup>a</sup>, which may be rigidly connected by the sleeve 3, as is usual in such constructions.

4 designates the drive-shaft, whereby the rotation of the drive-wheels is transmitted to the rotary knives 5 by the construction to be described hereinafter. To the shaft 4, adjacent

each end thereof, is applied a drive-wheel 6, said wheel having a central hub 7, sleeved onto said shaft. The hub 7 forms part of a central casting comprising the web 8 and the outwardly-extending annular flange 9. The interior surface of this flange is provided with numerous ratchet-teeth 10, each tooth having an abrupt shoulder or face 11, said face extending in the direction of a radius drawn from the center of the shaft. Each tooth is also provided with an inclined face 12 opposite the face 11.

A cap 13 is pinned onto the shaft 4, preferably outside the hub 7, and is provided with a circular transverse web 14, extending across and covering the flange 9 to form an inclosure therewith and with the web 8. The web 14 is provided with an inwardly-extending flange 15, complementary to and adapted to fit within the flange 9 and provided with diametrically oppositely located openings or recesses 16.

17 denotes a pawl by means of which the wheel 6 is clutched to the shaft 4 when the mower is driven in a forward direction. This pawl consists of a bar or strap of such a length as to permit its ends to project through the recesses 16 and to permit one end of the same to pass over the flattened outer face of a tooth 10 while the other end is within the recess formed between a pair of such teeth, but not quite in contact with the bottom of such recess, as indicated in dotted lines in Fig. 2, this result being obtained by the use of an odd number of teeth.

The side member 2 is sleeved onto the shaft 4 and constitutes a cover for the gear-case containing the internal gear 18, which drives the rotary knives 5 by means of the shaft 19 and a small pinion 20. This construction in its details forms no part of the invention herein claimed, being merely illustrative of one type of mower to which my invention may be applied.

From the preceding description the operation will be apparent. When the lawn-mower is driven forwardly, owing to the large number of ratchet-teeth an abrupt face 11 of one of said teeth will be almost immediately engaged by one end of the pawl 17, thereby dispensing with lost motion. This clutches the drive-wheel to the shaft 4 through the flange 15 of the cap 13, which is pinned to said shaft. By means of the gear 18 and pinion 20 the rotation of this shaft

is transmitted to the reel-shaft 19. When the mower is moved in a backward direction, the nearest inclined face 12 of a tooth 10 will engage the adjacent end of the pawl 17, causing the pawl to ride up over the tooth. When this end of the pawl has cleared its tooth, the opposite end of the pawl will be brought into engagement with an inclined face of the tooth adjacent to it, and in this manner the pawl will be oscillated across the face of the hub and will not transmit the movement of the wheel to the drive-shaft. An important feature of the invention resides in the shape of the pawl 17. As will appear more particularly from Figs. 2 and 4, the pawl is offset at the center, as shown at 17<sup>a</sup>, whereby it may clear the shaft 4 and the hub 7, making it unnecessary to provide these members with recesses or slots for the passage of the pawl, with the result that a cheaper and stronger construction of these parts is secured.

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

1. In a lawn-mower, the combination of a drive-shaft, a drive-wheel, said wheel having a central hub sleeved on said shaft, an internal ratchet-gear carried by said wheel intermediate of the shaft and the rim of said wheel, a member rigidly connected to said shaft and having a flange adapted to fit within the ratchet-gear, said flange being provided with recesses, and a pawl extending through the recesses in said flange and adapted to be engaged by the ratchet-teeth, substantially as specified.

2. In a lawn-mower, the combination of a drive-shaft, a drive-wheel, said wheel having a central hub sleeved on said shaft, an internal ratchet-gear carried by said wheel intermediate said hub and the rim of the wheel, said gear being provided with an odd number of teeth, a member rigidly connected to said shaft and having a flange adapted to fit within the ratchet-gear, said flange being provided with oppositely-located recesses, and a pawl extending through the recesses in the flange and being of such length as to permit one end to ride upon the face of a ratchet-tooth with the other end in the recess between the opposite ratchet-teeth, substantially as specified.

3. In a lawn-mower, the combination of a drive-shaft, a drive-wheel, said drive-wheel having a central hub sleeved on said shaft, a web projecting from said hub, an annular flange carried by said web surrounding a portion of said hub, a cap rigidly connected to said shaft and having a flange adapted to fit within the first-mentioned flange, the latter flange being provided with oppositely-located recesses, ratchet-teeth carried by the first-mentioned flange, and a pawl extending through the recesses in the second

flange and adapted to be engaged by the ratchet-teeth, substantially as specified.

4. In a lawn-mower, the combination of a drive-shaft, a drive-wheel, said wheel having a hub sleeved on said shaft, an outwardly-projecting annular flange connected to said wheel, said flange being provided with internal ratchet-teeth, a cap rigidly connected to said shaft outside the drive-wheel and having an inwardly-directed flange adapted to fit within the teeth on the former flange and having a pair of oppositely-located recesses, a pawl having its opposite ends projecting through said recesses and having the portion intermediate said ends offset to clear the drive-shaft, substantially as specified.

5. In a lawn-mower, the combination of a drive-shaft, a drive-wheel having a hub sleeved on said shaft and an outwardly-projecting annular flange surrounding a portion of said hub and provided with internal ratchet-teeth, each of said teeth having an abrupt face and an inclined face, a cap outside of said wheel and rigidly secured to said shaft, said cap having a flange provided with oppositely-located recesses, said flange being complementary to the flange on the drive-wheel and of a diameter to be fitted within the teeth on the former flange, a pawl having its opposite ends projecting through the recesses in the second flange and of a length slightly less than the distance from the crown of a tooth to the bottom of the recess between oppositely-located teeth, said pawl having its central portion offset to clear the wheel-hub, substantially as specified.

6. In a lawn-mower, the combination of a drive-shaft, a wheel having a hub sleeved on said shaft, an annular flange surrounding a portion of said hub and connected thereto, said flange having ratchet-teeth on the inner face thereof, a member rigid with said shaft and having a complementary annular flange provided with oppositely-located recesses and being of a diameter to fit within the teeth of the first-mentioned flange, a pawl having its opposite ends projecting through said recesses and being offset intermediate the ends thereof to clear the drive-shaft, substantially as specified.

7. In a lawn-mower, the combination of a drive-shaft, a drive-wheel for said shaft, said wheel having a hub sleeved on said shaft and being provided with an annular flange intermediate of the hub and rim, said flange having an odd number of ratchet-teeth on the interior thereof, each of said teeth having an abrupt face and an inclined face, a member rigid with said shaft and adjacent said wheel, said member having a flange complementary to the first-mentioned flange and of a diameter to be fitted within the ratchet-teeth thereon, the second flange being provided with oppositely-located recesses, a pawl having its ends projecting through said

recesses and provided with an intermediate offset portion to clear the drive-shaft, the length of said pawl being sufficient to permit one end to ride upon the inclined face of a ratchet-tooth with the other end in the recess between the opposite ratchet-teeth, substantially as specified.

8. In a lawn-mower, the combination of a drive-shaft, a drive-wheel having a hub sleeved on said shaft, a web projecting outwardly from said hub and provided with an annular flange surrounding a portion of said hub and provided with internal ratchet-teeth, a member rigid with said shaft and adjacent the wheel, said member having an outwardly-extending web and a flange complementary to the first-mentioned flange and provided with oppositely-located recesses, the second flange being of a diameter to permit it to be fitted within the ratchet-teeth on the former flange, and a pawl in the chamber formed between said webs and flanges, said pawl having its opposite ends projecting through the recesses of the inner flange and

having its central portion offset to clear the drive-shaft, substantially as specified. 25

9. In a lawn-mower, the combination of a drive-shaft, a drive-wheel, said wheel having a hub sleeved on said shaft, and clutch mechanism intermediate said wheel and shaft, said mechanism comprising an internal ratchet-gear carried by said wheel, a member rigid with the shaft and a pawl adapted to connect said member and said ratchet-gear, said pawl consisting of a bar having its ends projecting into diametrically opposite portions of said ratchet-gear and being offset intermediate of its ends in a plane at right angles to the axis of said shaft, the portion of said shaft which is adjacent to the pawl being imperforate, substantially as specified. 35 40

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

LINNAEUS E. BAKER.

Witnesses:

J. B. HULL,  
S. E. FOUTS.