

No. 715,452.

Patented Dec. 9, 1902.

F. L. ADAMS.
LAWN MOWER.

(Application filed Feb. 27, 1902.)

(No Model.)

3 Sheets—Sheet 1.

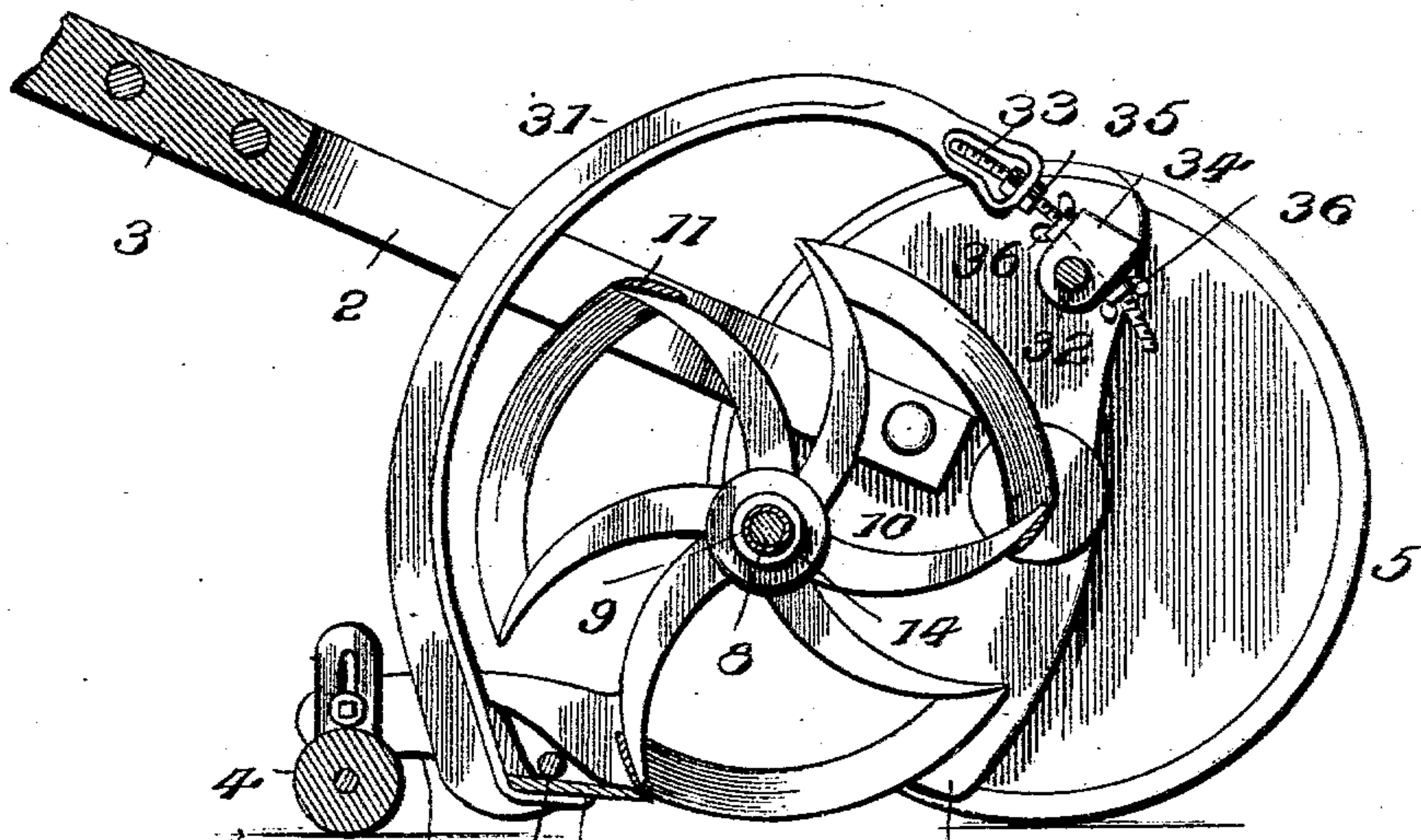


Fig. 1.

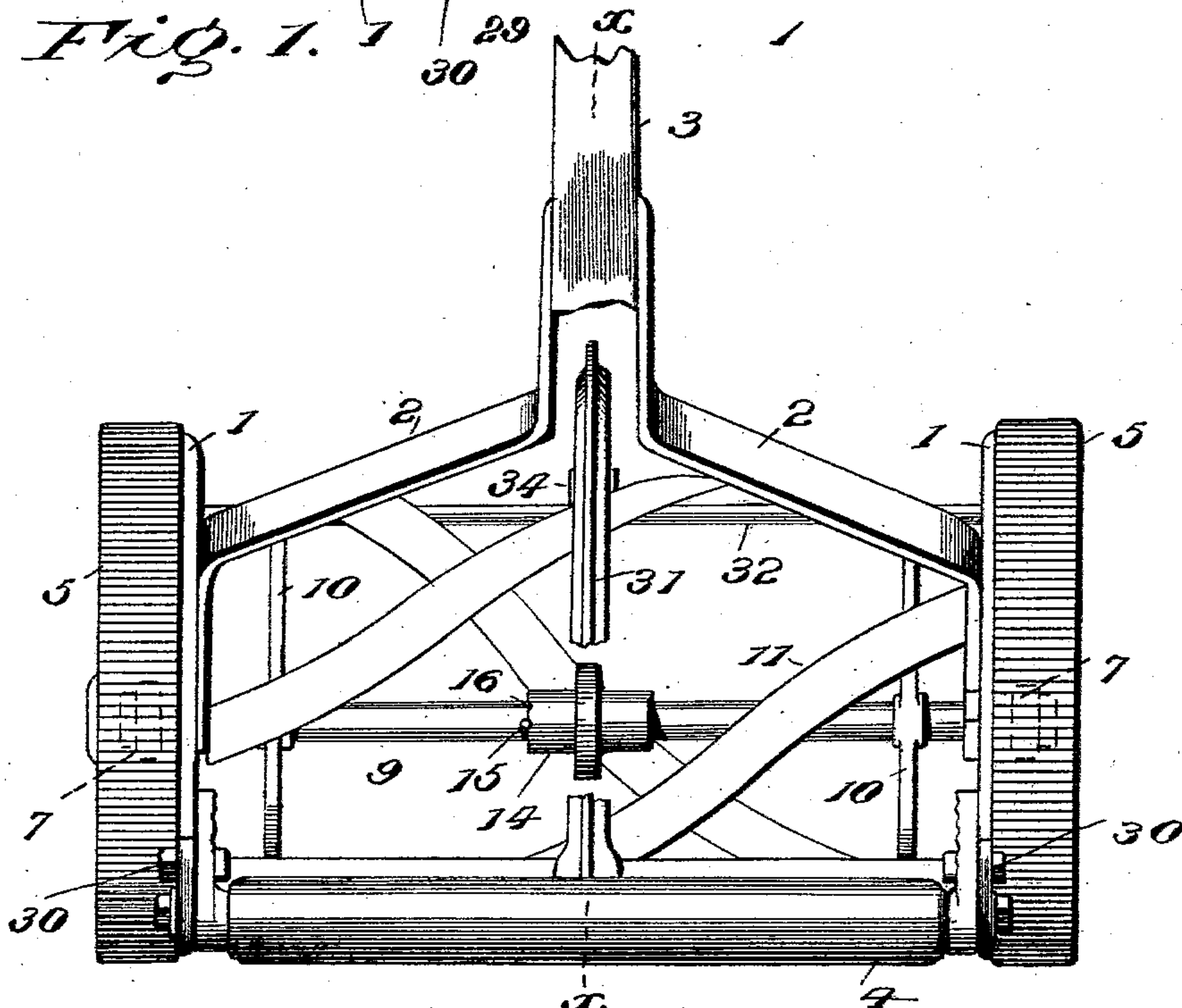


Fig. 2.

Inventor.

F. L. Adams

Witnesses.

Mr. J. M. L. Thompson

By
A. H. R. Lacey

Attorneys

No. 715,452.

Patented Dec. 9, 1902.

F. L. ADAMS.

LAWN MOWER.

(Application filed Feb. 27, 1902.)

(No Model.)

3 Sheets—Sheet 2.

FIG. 3.

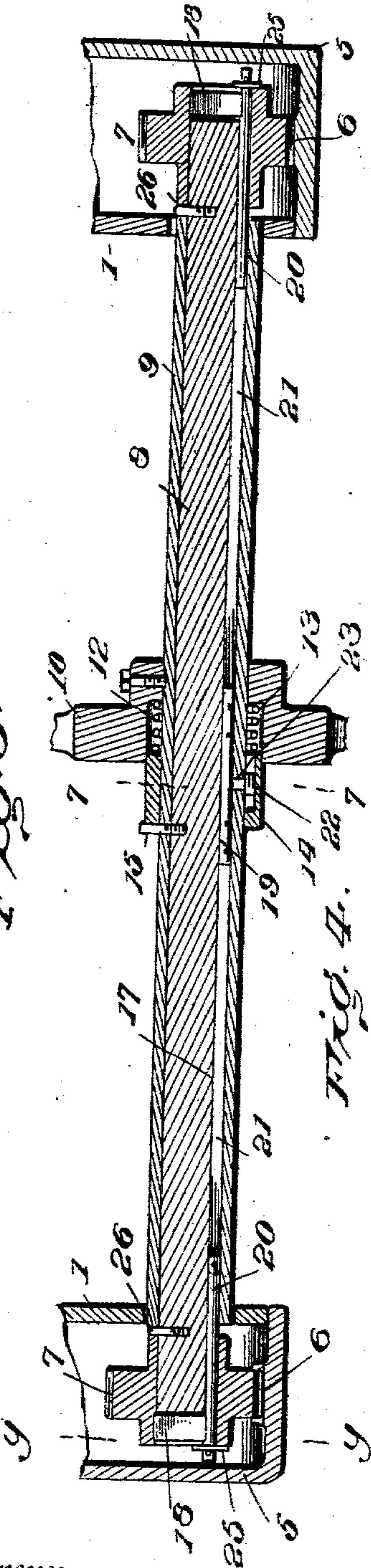


FIG. 4.

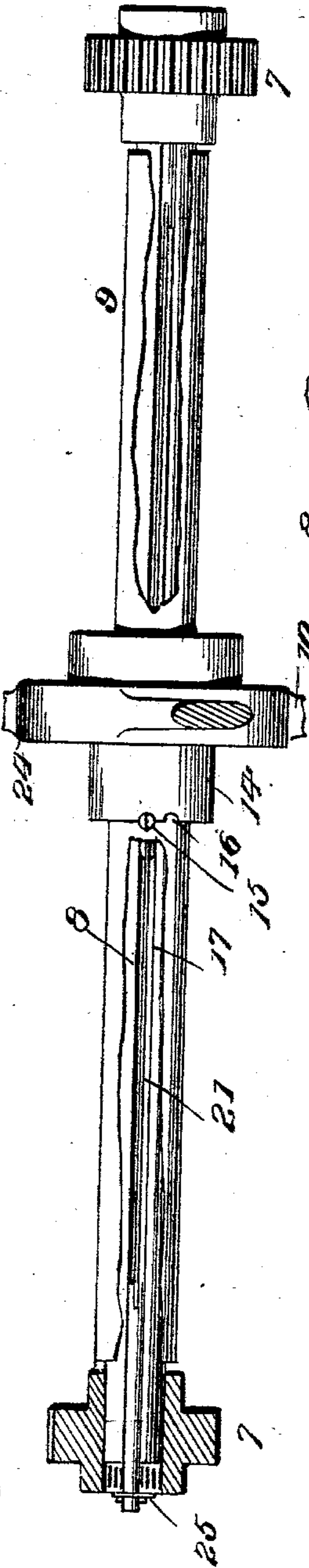
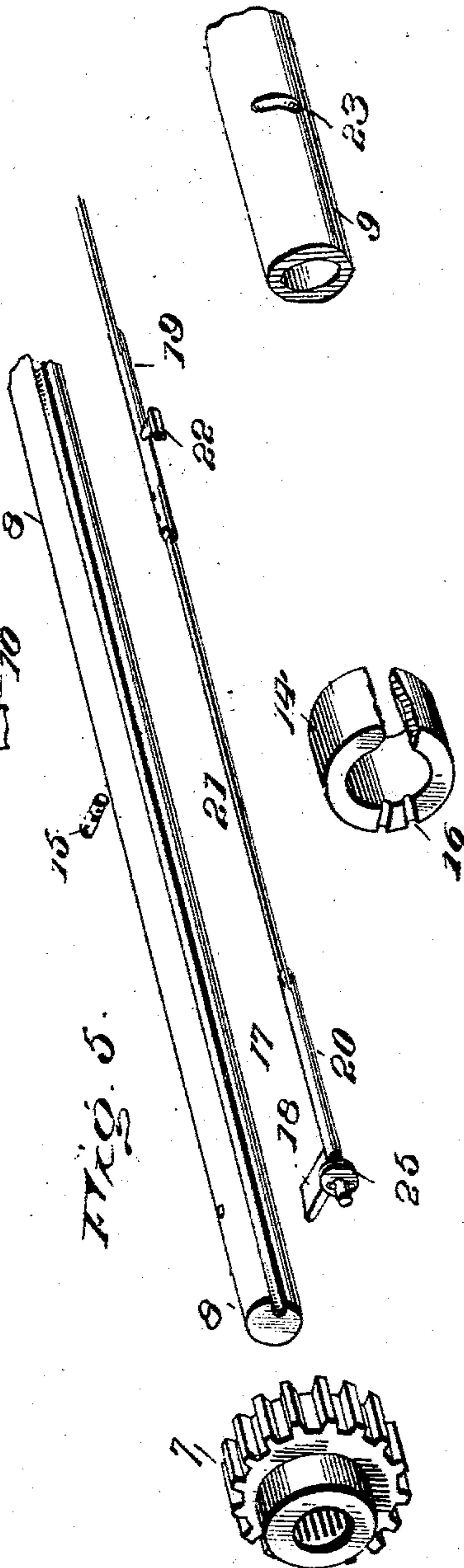


FIG. 5.



Witnesses.

Wm. M. ...
Clayton L. Thompson

Inventor
F. L. Adams

A. B. Lacey

Attorneys

No. 715,452.

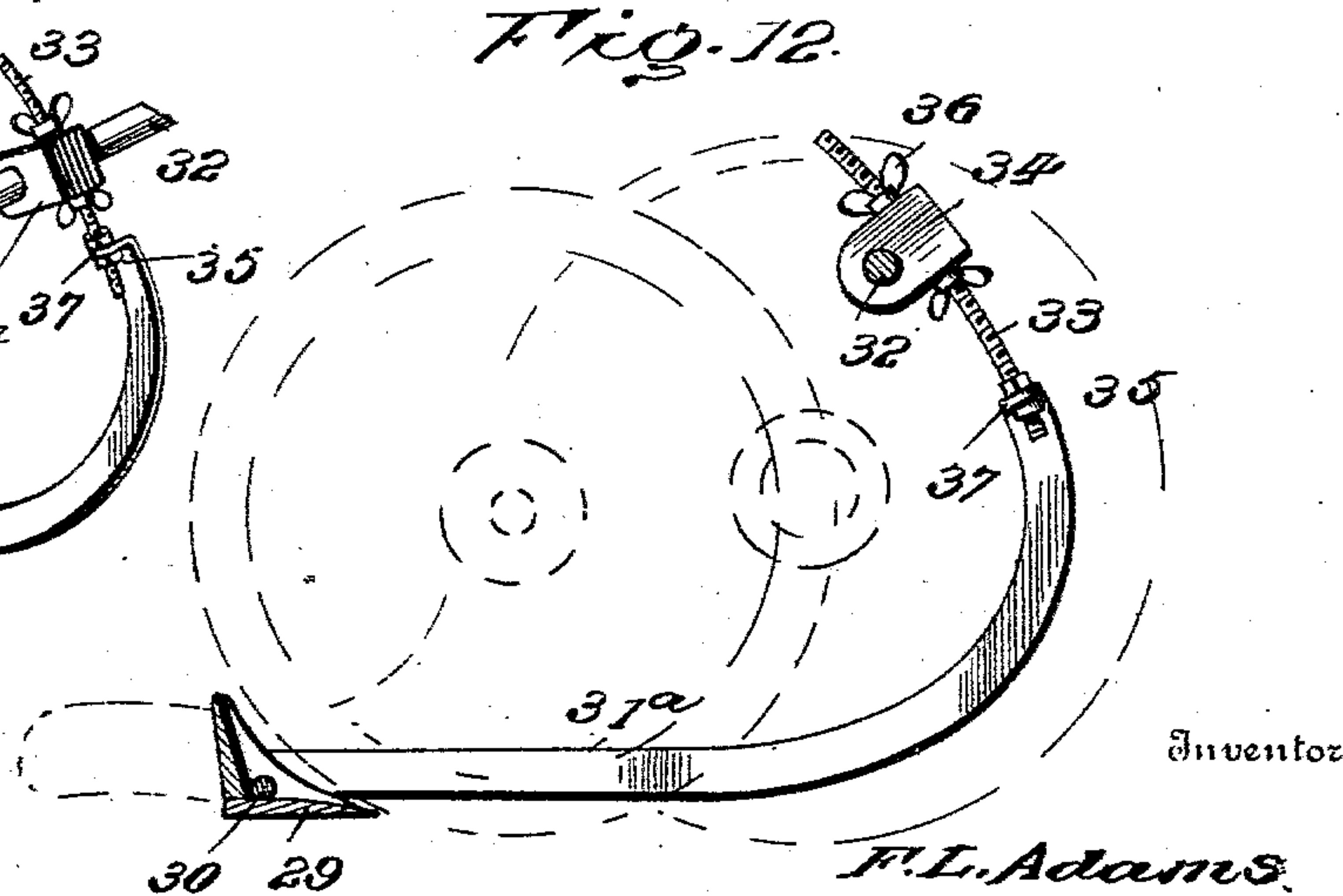
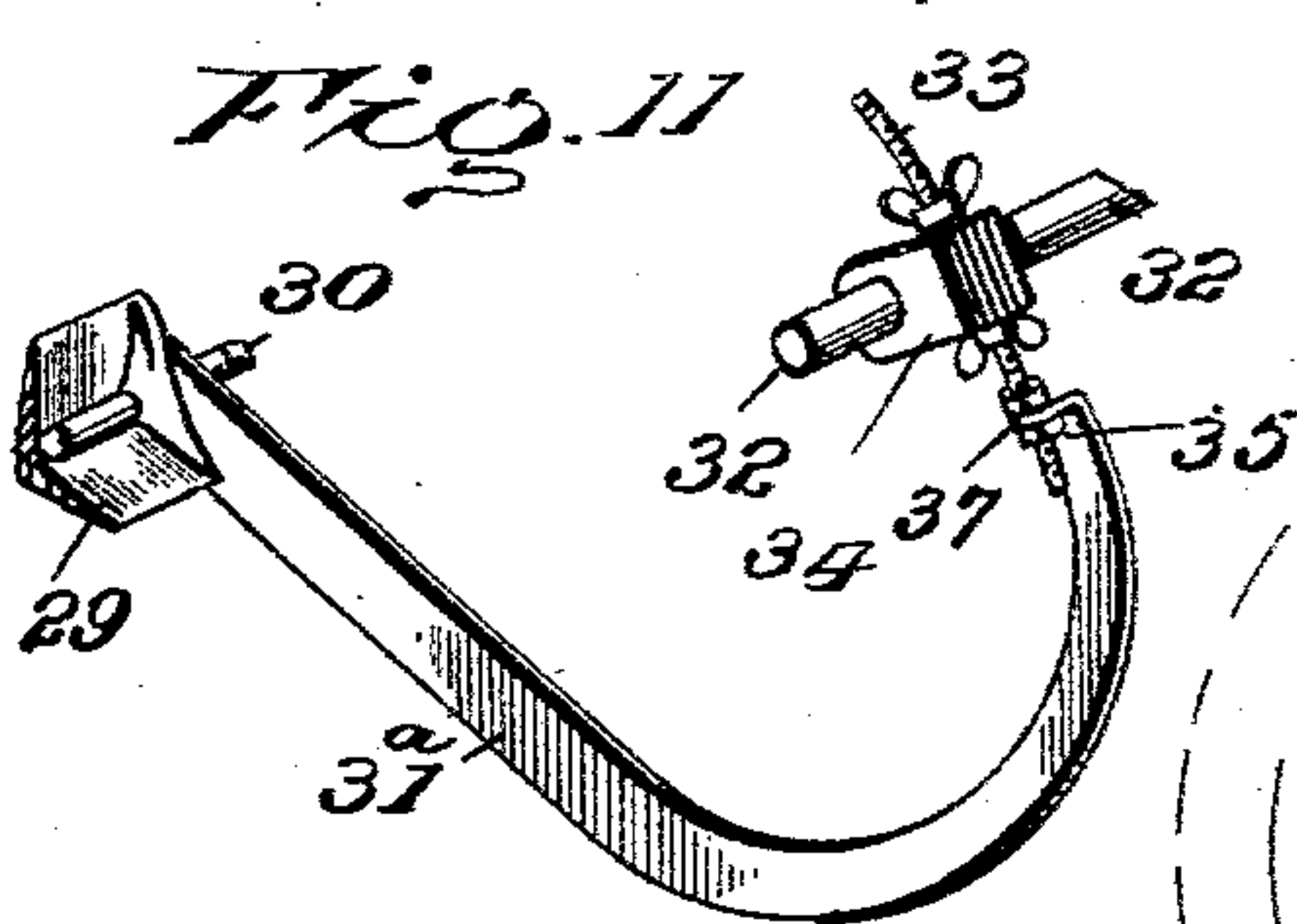
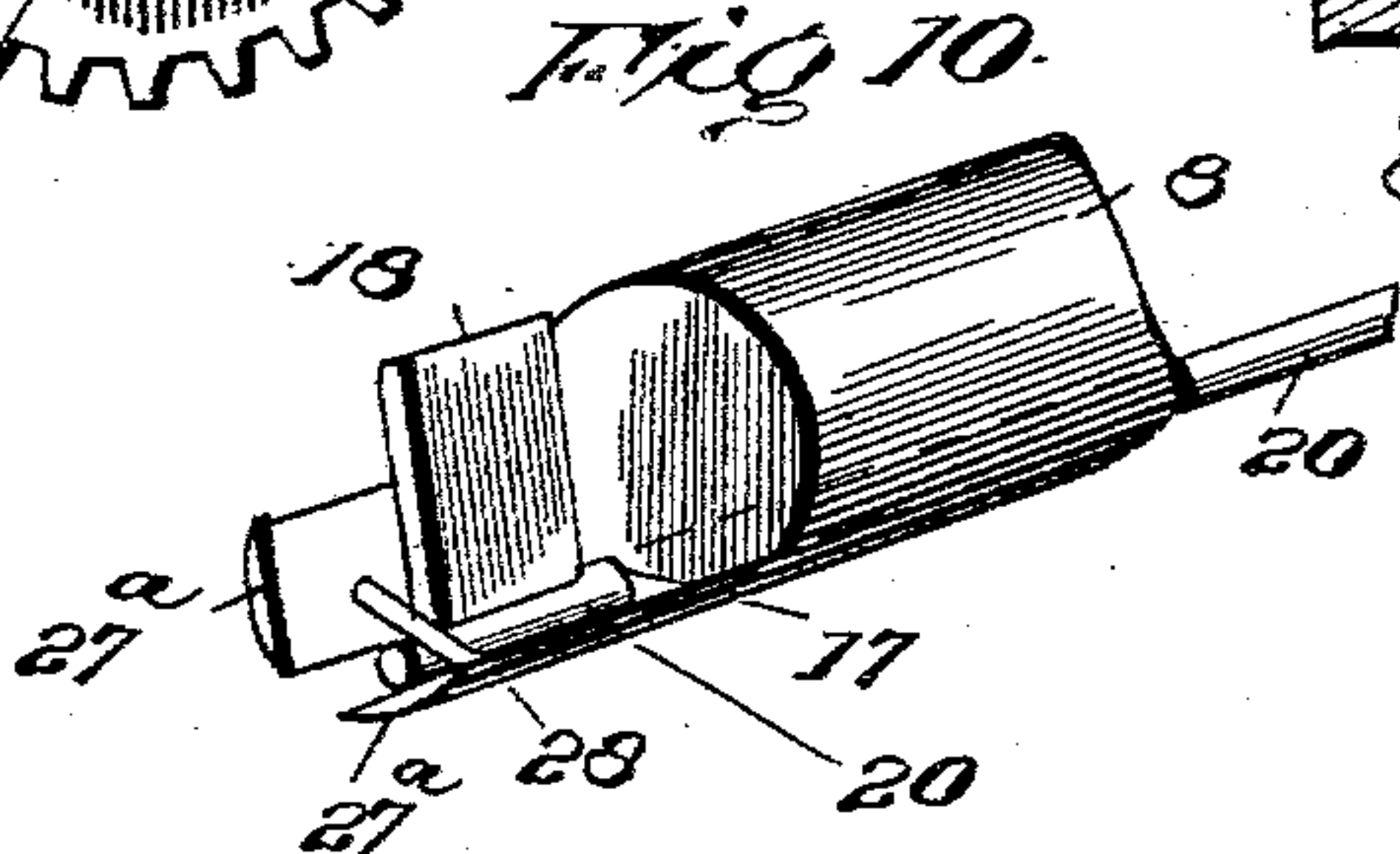
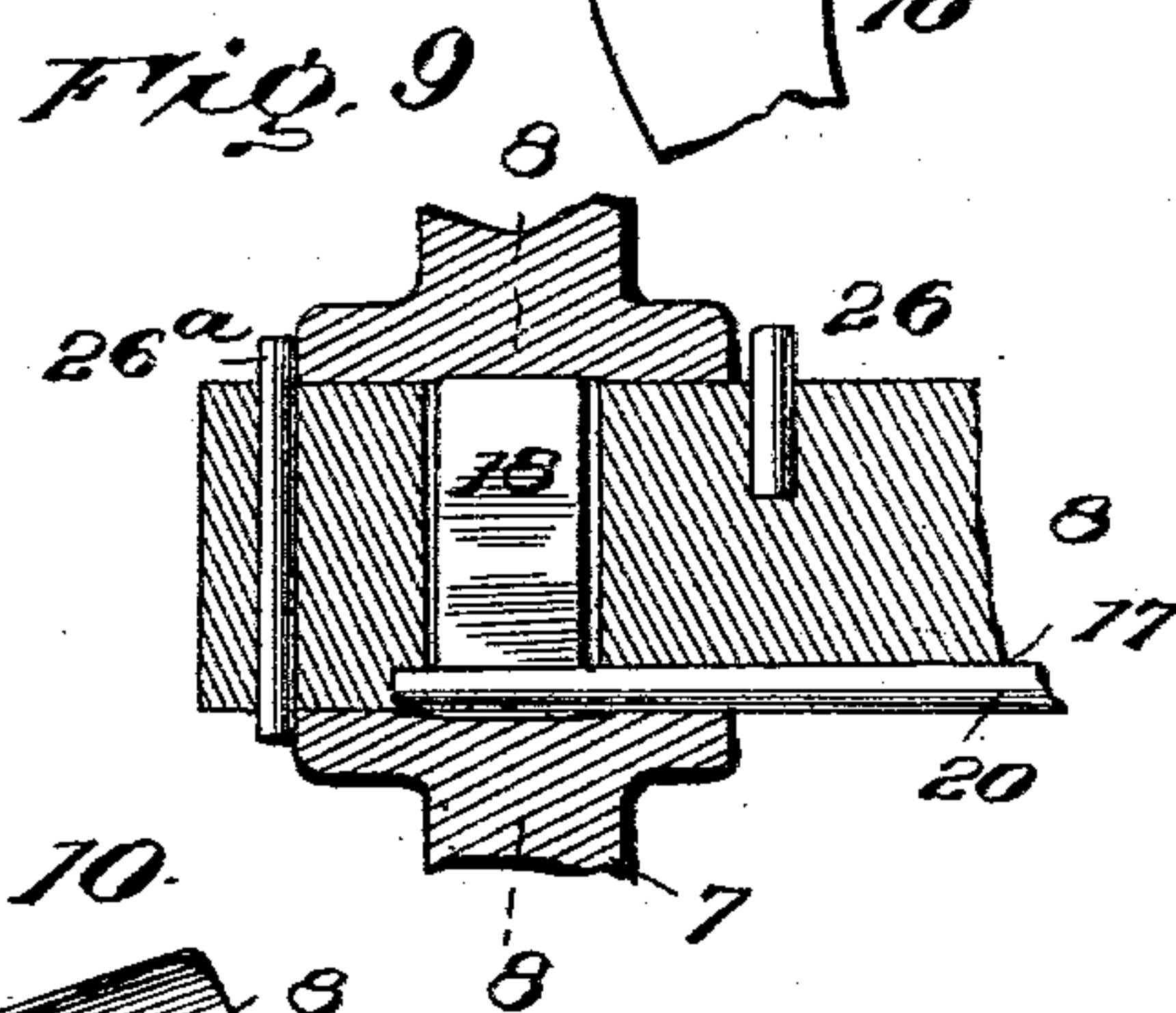
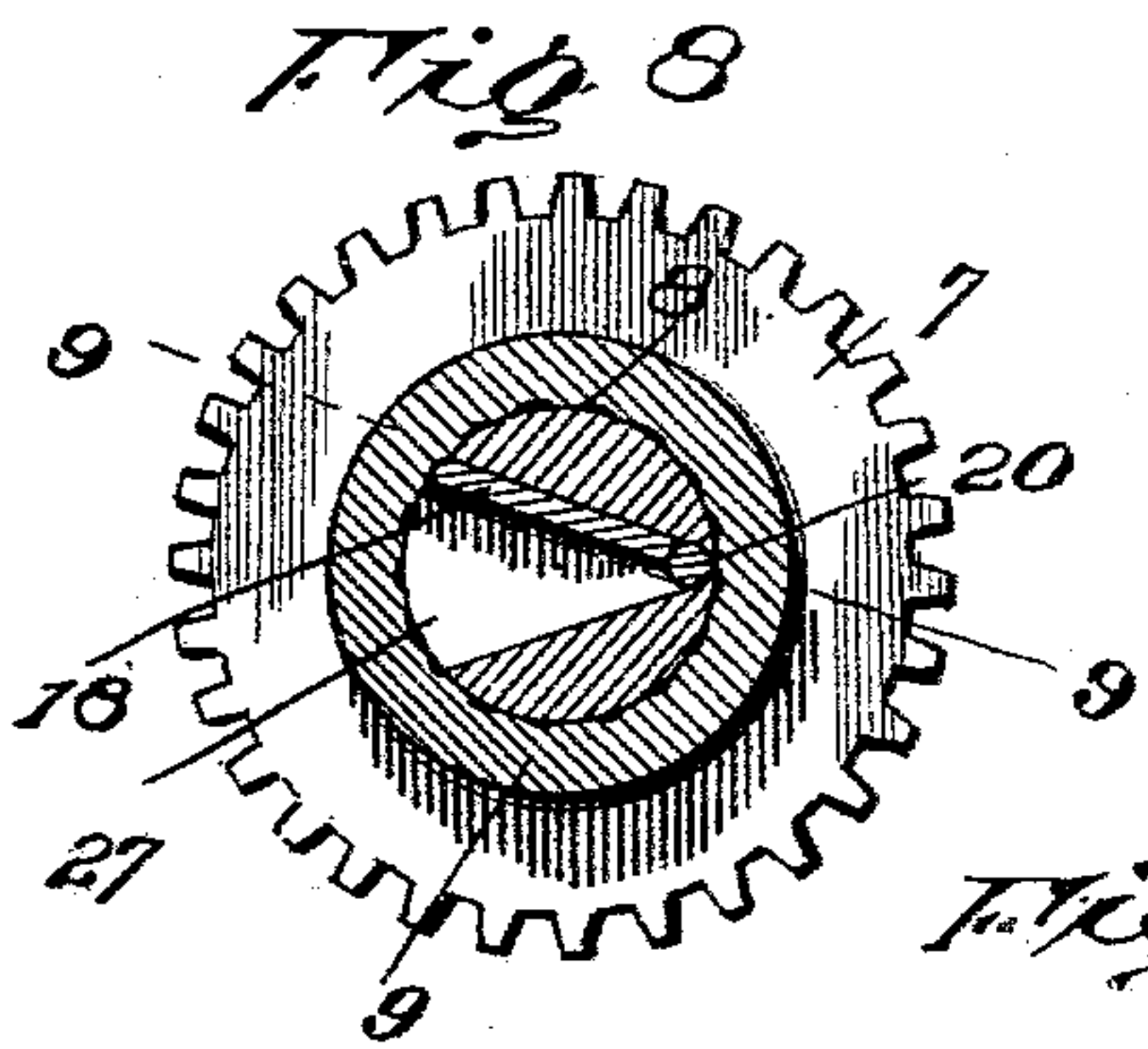
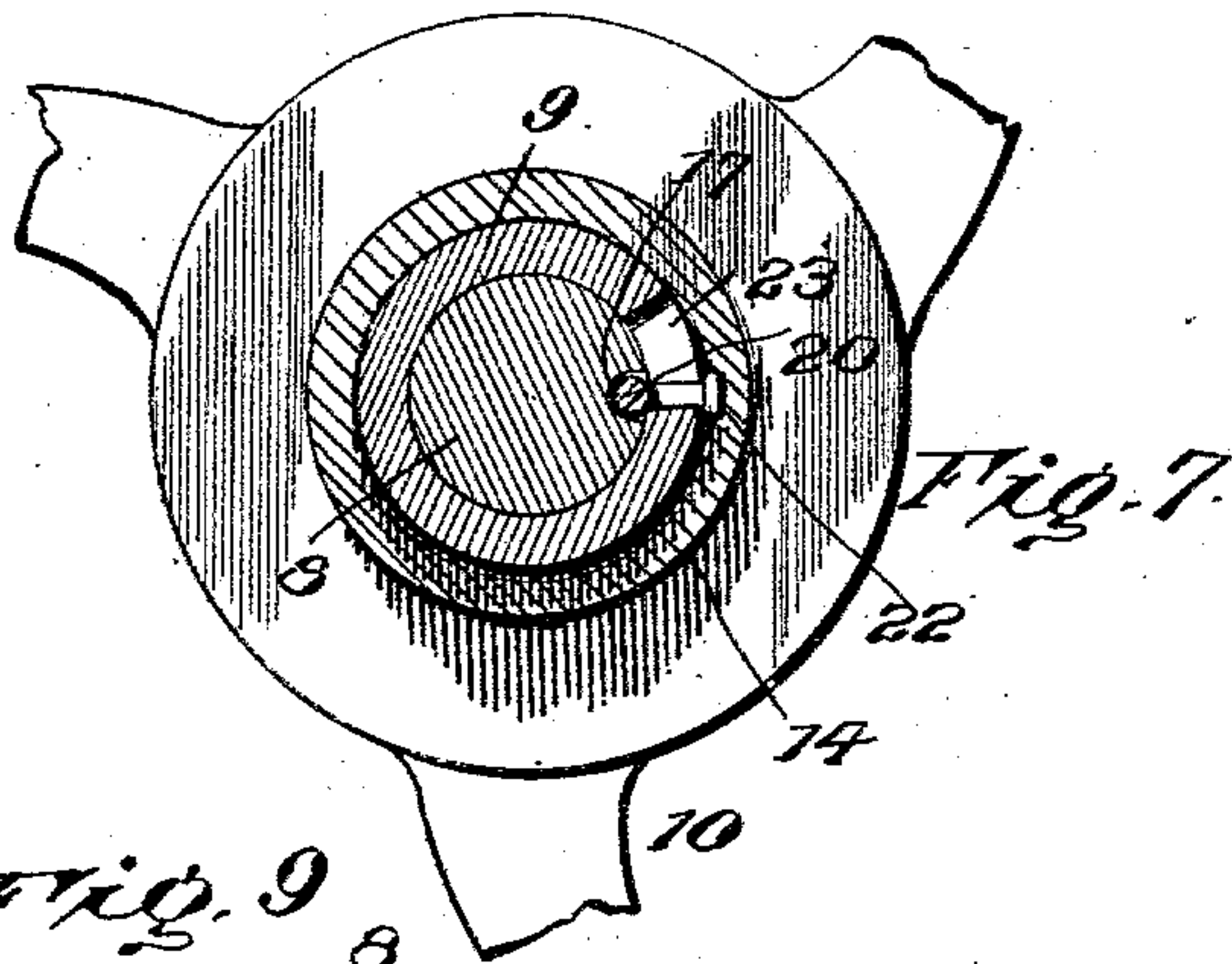
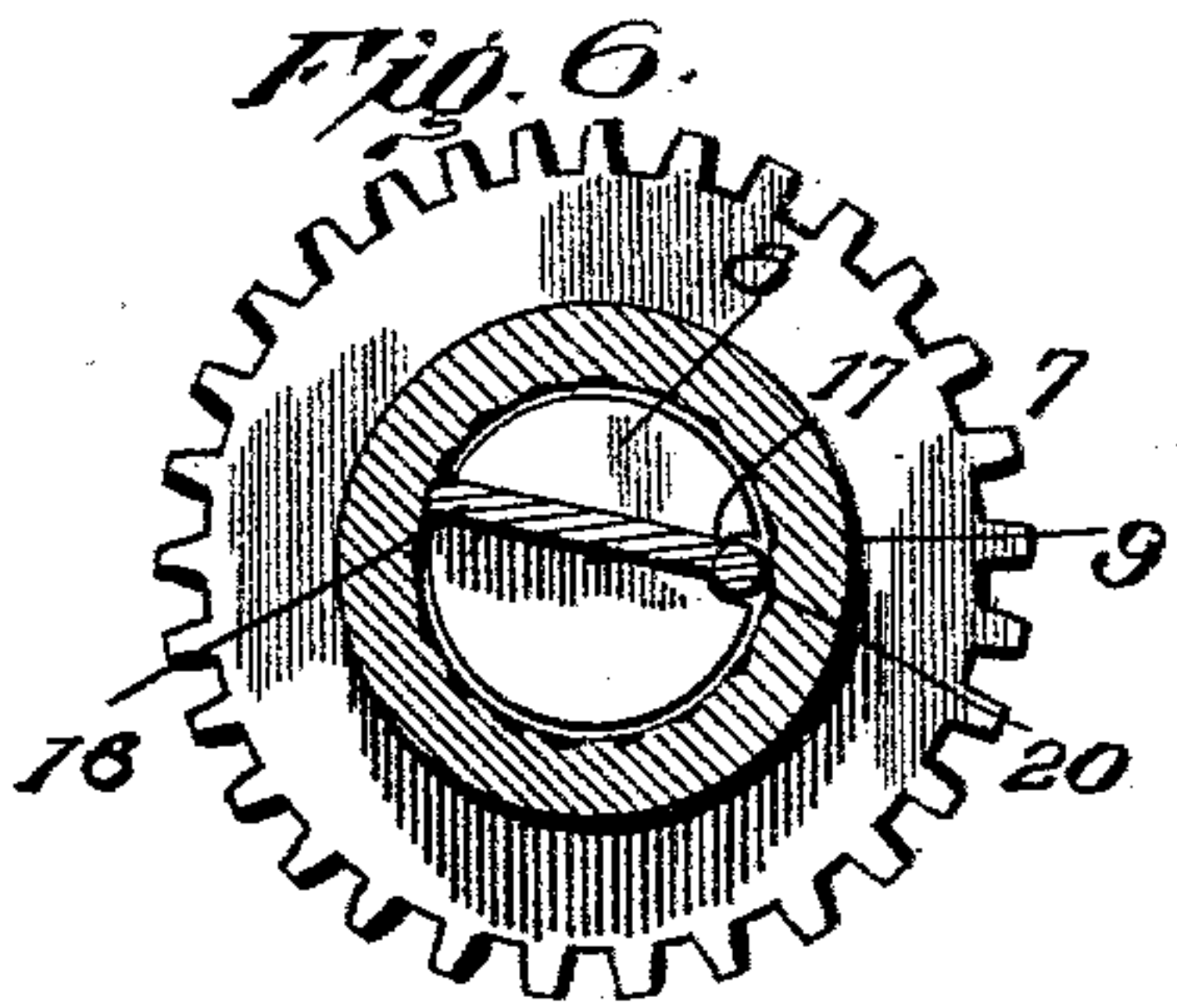
Patented Dec. 9, 1902.

F. L. ADAMS.
LAWN MOWER.

(Application filed Feb. 27, 1902.)

(No Model.)

3 Sheets—Sheet 3.



Witnesses

For Invention
Gladys D. Thompson

R. H. Racy

Inventor

F. L. Adams.

Attorneys

UNITED STATES PATENT OFFICE.

FRED L. ADAMS, OF PROPHETSTOWN, ILLINOIS.

LAWN-MOWER.

SPECIFICATION forming part of Letters Patent No. 715,452, dated December 9, 1902.

Application filed February 27, 1902. Serial No. 95,957. (No model.)

To all whom it may concern:

Be it known that I, FRED L. ADAMS, a citizen of the United States, residing at Prophetstown, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Lawn-Mowers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention appertains to mowing-machines of the type comprising a fixed cutter-bar and a rotary cutting-reel, and has for its object to provide novel means to readily admit of reversing the rotation of the cutting-reel without necessitating the interchange or displacement of the parts. The reverse rotation of the cutting-reel is necessary when sharpening the cutters by an abrading material applied to the side of the stationary cutter facing the cutting-reel and by changing the position of the parts, so as to bring the stationary cutter into an approximately vertical position, whereby the abrading material will automatically feed to the wearing parts of the cutters and effect a sharpening thereof.

A further purpose of the invention is to combine novel means with the stationary cutter, so as to turn it about an axis to advance its cutting edge toward the cutting-reel, whereby the cutting edges of the stationary and rotating blades may be brought into close contact to effect the desired work in a rapid and satisfactory manner.

The invention also consists of the novel features, details of construction, and combinations of the parts, which hereinafter will be more particularly set forth, illustrated, and finally claimed.

In the drawings hereto attached forming a part of the specification, and in which corresponding elements are indicated in all the views by the same reference characters, Figure 1 is a section about on the line X X of Fig. 2. Fig. 2 is a rear view, parts being broken away. Fig. 3 is a longitudinal section of the reel-shaft, on a larger scale, showing parts of the ground-wheels and the central support for the knives. Fig. 4 is a view in elevation of the parts shown in Fig. 3, one of the end pinions being in section and parts of the sleeve being broken away. Fig. 5 is a detail per-

spective view of the component parts cooperating with the reel-shaft, the same being separated and arranged in a group. Fig. 6 is a view on the line Y Y of Fig. 3. Fig. 7 is a section on the line 7 7 of Fig. 3. Fig. 8 is a section of the end portion of the reel-shaft and adjacent parts on the line 8 8 of Fig. 9, showing a modification. Fig. 9 is a section on the line 9 9 of Fig. 8. Fig. 10 is a perspective view of an end portion of a modified form of shaft, showing the dog in place. Fig. 11 is a perspective view of a modification, showing different means for turning the stationary cutter-bar when it is required to adjust the same. Fig. 12 is a detail view showing the device illustrated in Fig. 11 in operative position.

The mower in its general construction may be of any pattern, make, or size so long as it embodies in its organization a rotary cutting-reel and a stationary cutter. The cutter cooperating with the blades of the cutting-reel is designated as being stationary or fixed in order to distinguish it from the rotating cutters applied to and forming a part of the reel, and it is not to be understood that the said stationary cutter is devoid of adjustment, because, as illustrated and hereinafter described, it is obvious that the same is mounted so as to have a limited adjustment to compensate for wear incident to sharpening and ordinary usage.

The head of the mowing-machine comprises side pieces 1 and bars 2, the latter having their front ends spread and firmly connected to the side pieces 1 and their inner ends brought close together and clamped against opposite sides of the handle 3. The gage-roller 4 has adjustable connection with the rear ends of the side pieces 1, so as to regulate the distance of the cutting mechanism above the surface over which the machine is propelled. The ground-wheels 5 have their tread roughened in the usual manner to increase the traction and prevent slipping and are internally toothed, as shown at 6, to mesh with the pinions 7, loosely mounted upon the ends of the shaft 8, forming the support and axis for the cutting-reel. The shaft 8 is journaled near its ends in the side pieces 1 in any convenient way and supports a sleeve 9, to which the supports 10 of the cutting-reel are attached in any selected way.

As shown, three supports 10 are provided, and the cutting-blades 11 are firmly attached thereto, so as to bring their cutting edges on a straight line with a given circle. The hub of one of the supports 10, preferably the middle one, is recessed, as shown at 12, and receives a coil-spring 13, which exerts an outward pressure upon a sleeve or collar 14, loosely mounted upon the part 9, so as to receive a limited longitudinal and rotary movement. This part 14 constitutes a finger-piece for shifting the clutch mechanism when it is required to reverse the rotation of the cutting-reel and is held in the required position by means of a pin or stop 15, let into the shaft 8 and adapted to enter one of a series of notches 16, formed in the proximal end of the sleeve 14.

The pinions 7 are loosely mounted upon the end portions of the shaft 8 and are prevented from longitudinal displacement by any convenient means, some of which are shown in the several views and referred to in detail hereinafter. A longitudinal groove 17 is formed in a side of the shaft 8 and receives a reversing rod or bar provided at its ends with dogs 18, constituting the essential part of the clutch mechanism for securing the pinions 7 to the shaft 8 when imparting rotation to the cutting-reel in the desired direction. The parts 18 are clutch-dogs and are of a length about equal to the diameter of the shaft 8 or the opening through the pinions with which said dogs cooperate. The dogs are adapted to be shifted to one side or the other of a diametrical line, and their position determines the direction of rotation of the cutting-reel. The reversing rod or bar comprises, essentially, a number of different sections, the middle section 19 and the end sections 20 being rigid, whereas the intermediate portions 21 are resilient, being flat strips of spring material, such as steel. When the pinions 7 are rotated in one direction, the dogs 18 ride thereon; but when rotating the pinion in the opposite direction the dogs grip the same and compel rotation of the shaft and pinions, thereby imparting movement to the cutting-reel. Upon turning the reversing rod or bar so as to shift the position of the dogs 18 a reverse of this operation takes place—that is, the cutting-reel is rotated in the opposite direction. The spring portions 21 of the reversing rod or bar admit of the action of the clutch-dogs 18 in the manner set forth. The reversing rod or bar has connection with the sleeve or finger-piece 14, preferably by means of a pin 22 of approximately T form and extended from the middle section 19 and passing through a circumferential slot 23 in a side of the sleeve 9, the head entering a groove 24 in the inner side of the part 14, as shown most clearly in Fig. 3. In the construction shown in Figs. 3, 4, and 5 washers 25 are secured to the projecting ends of the reversing rod or bar and overlap the outer ends of the pinions 7 and prevent outward displacement

thereof, inward movement of said pinions being prevented by pins 26, let into the end portions of the shaft 8. In this form of construction the clutch-dogs 18 are located wholly beyond the ends of the shaft 8 and within the projecting ends of the pinion 7. This arrangement, however, is not essential and may be varied, as shown in Figs. 8, 9, and 10. As illustrated in Figs. 8 and 9, the shaft 8 extends through and beyond each of the pinions 7 and the projecting end receives a pin 26^a and the portion inclosed by the pinion is slotted, as shown at 27, to receive the clutch-dog 18. In the form shown in Fig. 10 the end portions of the shaft 8 are cut away, leaving segmental extensions 27^a, through which a pin 28 passes for holding the pinions from outward displacement.

The cutter-bar 29, designated as the “stationary” cutter, is pivotally mounted in any desired way, being connected at its ends by a rod 30 to the side pieces 1. An arm 31 is rigidly connected at its lower end to the cutter-bar preferably midway of its ends and curves upwardly and forwardly over the cutter-reel and is adjustably connected at its front end to a cross-bar 32, supported at its ends in the side pieces 1. Within the scope of the invention the arm 31 may have any form and be adjustably connected to the cross-bar 32 in any convenient way. As shown in Fig. 1, the front end of the arm 31 is slotted and receives one end of a threaded rod 33, the opposite end of which passes through a block 34, pivotally mounted upon the cross-bar 32. A pair of nuts 35 adjustably connect the threaded rod 33 with the arm 31, and a corresponding pair of nuts 36 connect said rod with the block 34. By advancing one of the nuts of either pair and backing the other the distance of the front end of the arm 31 from the cross-bar 32 may be varied, and this adjustment of the arm turns the cutter-bar 29 and moves the cutting edge thereof either toward or away from the cutting-reel, thereby making provision for proper adjustment of the cutting mechanism, so as to secure the best possible results. The central disposition of the arm 31 and its upward and forward curvature are not essential, and Figs. 11 and 12 show a construction in which the arm 31^a extends forward, thence upward, and terminating in a bent end 37, which is apertured for the reception of one end of the threaded rod 33, which is provided with pairs of nuts 35 and 36 in the manner stated. This arm 31^a is located at one end of the cutter-bar 29, so as to be out of the way of the cutting-reel.

When it is required to sharpen the cutting mechanism, the mower is inverted, so as to bring the cutter-bar 29 into an approximately vertical position, after which fine emery or any abrasive material is supplied to the side of the cutter-bar facing the cutting-reel, oil being added as a carrier-vehicle. The clutch mechanism is reversed by operating the finger-piece 14, and upon propelling the machine

over the ground or surface the cutting-reel is rotated in a reverse direction, whereby sharpening of the cutters is effected in the well-known manner. After the sharpening has been accomplished the clutch mechanism is again reversed to admit of rotation of the cutting-reel in a direction to act in conjunction with the cutter 29 to effect mowing of grass, grain, or the like, according to the character of the machine. To prevent slipping of the clutch, the pinions 7 have their inner surfaces notched to receive the engaging ends of the dogs 18.

Having thus described the invention, what is claimed as new is—

1. In cutting apparatus for mowing-machines, and in combination with the rotary cutting-reel and actuating mechanism therefor, a pinion loosely mounted upon the shaft of the cutting-reel, a reversible ratchet-clutch between said pinion and shaft, a spring-reversing rod or bar for shifting the said clutch to effect a reverse rotation of the cutting-reel, a finger-piece for actuating the said reversing rod or bar, and means for holding the finger-piece and reversing rod or bar in the desired position, substantially as set forth.

2. In cutting mechanism for mowing-machines, and in combination with the cutting-reel and actuating mechanism therefor, a pinion loosely mounted upon the shaft of the cutting-reel, a reversible ratchet-clutch for connecting said pinion to the shaft of the cutting-reel, a reversing rod or bar adapted to yield so as to hold the clutch in proper position and yet admit of its riding upon the pinion, a spring-actuated finger-piece for actuating the reversing rod or bar and adapted to receive a rotary and longitudinal movement and having a series of notches, and a stop to enter any one of the said notches and hold the finger-piece in the required position, substantially as set forth.

3. In cutting apparatus for mowing-machines, and in combination with the cutting-reel and actuating mechanism therefor, a pinion loosely mounted upon the shaft of the cutting-reel, a reversible ratchet-clutch between the said shaft and pinion, a reversing rod or bar comprising rigid and spring portions, and a finger-piece connected with said reversing rod or bar to effect a change of position of the clutch for reversing the movement of the cutting-reel, substantially as set forth.

4. In cutting apparatus for mowing-machines, and in combination with the rotary cutting-reel and actuating mechanism therefor, a pinion loosely mounted upon the shaft of the cutting-reel, a reversible ratchet-clutch between said pinion and shaft, a reversing rod or bar for shifting said clutch and having an offstanding part, and a finger-piece for operating the said reversing rod or bar and having a groove upon its inner side to receive the projecting end of the said offstanding part of the reversing rod or bar, substantially as set forth.

5. In cutting apparatus for mowing-machines, and in combination with the rotary cutting-reel and actuating mechanism therefor, a pinion loosely mounted upon the shaft of the cutting-reel, a reversible ratchet-clutch between the pinion and shaft, a reversing rod or bar having an offstanding part, a sleeve encircling the shaft of the cutting-reel and having a circumferential slot for the reception of the offstanding part of said reversing-rod, and a finger-piece mounted upon said sleeve and having a groove upon its inner side to receive the projecting end of the offstanding part of said reversing-rod, substantially as set forth.

6. In cutting apparatus for mowing-machines, and in combination with the rotary cutting-reel and actuating mechanism therefor, a pinion loosely mounted upon the shaft of the cutting-reel, a reversible ratchet-clutch between said shaft and pinion, a reversing rod or bar located in a groove formed in the side of the shaft, a sleeve encircling said shaft and concealing the reversing rod or bar and having a circumferential slot, an offstanding part extended outward from the said reversing rod or bar into said slot, and a finger-piece for engagement with said offstanding part of the reversing-rod for actuating the latter, substantially as specified.

7. In combination, a rotary cutting-reel, pinions loosely mounted upon the ends of the shaft thereof, reversible ratchet-clutches between said pinions and shaft, a reversing rod or bar comprising a middle and end rigid portions and intermediate spring portions, the middle portion having an offstanding part, and a finger-piece having connection with the said offstanding part for operating the reversing rod or bar, substantially as set forth.

8. In cutting apparatus for mowing-machines, and in combination with the rotary cutting-reel, a pivotally-mounted cutter-bar for coöperation with the knives of the cutting-reel, an arm extended from the cutter-bar, a pivoted block, a threaded rod passed through apertured parts of the arm and block, and pairs of clamp-nuts for adjustably connecting said threaded rod with the arm and pivoted block, substantially as set forth.

9. In cutting apparatus for mowing-machines, and in combination with the rotary cutting-reel, a pivotally-mounted cutter-bar for coöperation with the knives of the cutting-reel, a curved arm extended from the cutter-bar, a pivoted block, a curved threaded rod passed through apertured parts of the arm and pivoted block, and pairs of clamp-nuts for adjustably connecting the threaded rod with the said arm and pivoted block, substantially as set forth.

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

FRED L. ADAMS. [L. S.]

Witnesses:

ANDREW T. GOSSMAN,
WALTON DUANE SMITH.