

No. 771,717.

PATENTED OCT. 4, 1904.

H. E. CONRAD.
HAIR CLIPPER.

APPLICATION FILED FEB. 6, 1904.

NO MODEL.

Fig. 1.

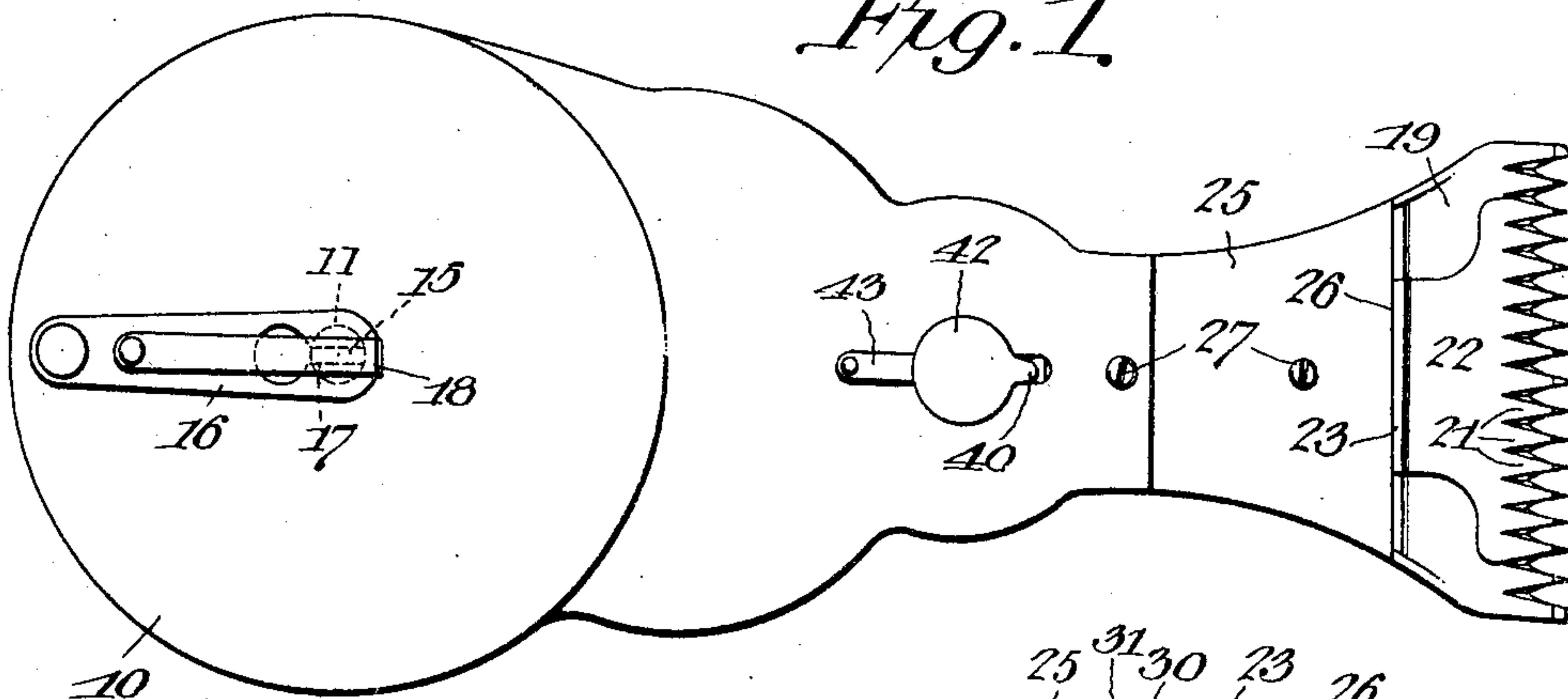


Fig. 2.

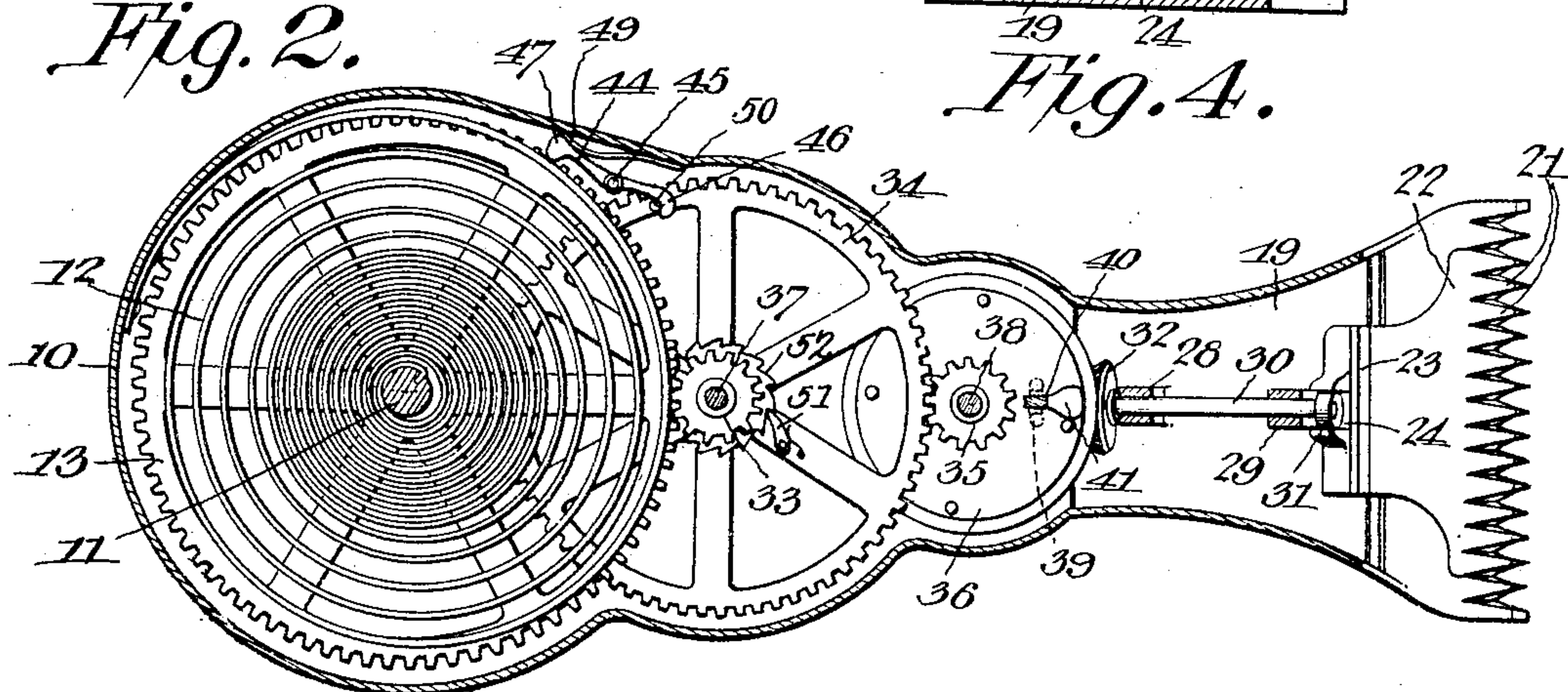


Fig. 4.

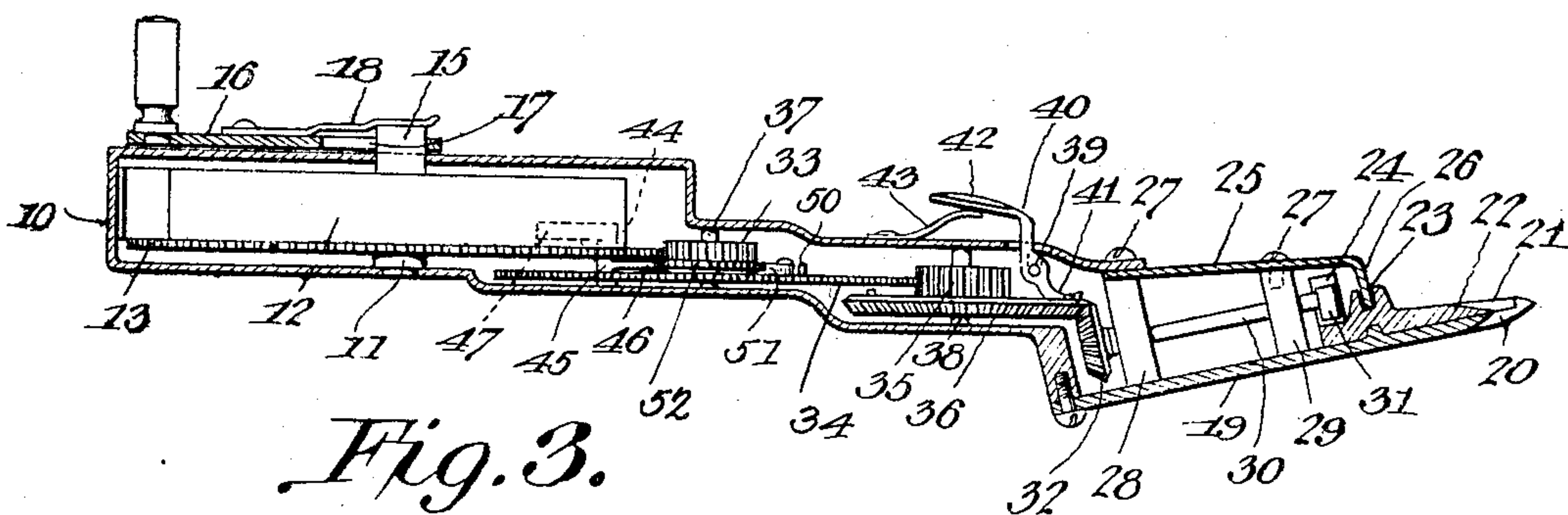


Fig. 3.

Witnesses
E. H. Stewart
E. H. Woodward

Harry E. Conrad,
Inventor.
by *C. A. Snow & Co.*
Attorneys

UNITED STATES PATENT OFFICE.

HARRY E. CONRAD, OF NANTY GLO, PENNSYLVANIA.

HAIR-CLIPPER.

SPECIFICATION forming part of Letters Patent No. 771,717, dated October 4, 1904.

Application filed February 6, 1904. Serial No. 192,434. (No model.)

To all whom it may concern:

Be it known that I, HARRY E. CONRAD, a citizen of the United States, residing at Nanty Glo, in the county of Cambria and State of Pennsylvania, have invented a new and useful Hair-Clipper, of which the following is a specification.

This invention relates to improvements in devices for clipping hair, and has for its object to provide a simply-constructed and easily-operated device of this character wherein the cutter member is actuated by a power-spring under the control of the operator.

Another object of the invention is to provide in a device of this character means for automatically stopping the motion when the power-spring is nearly expended.

With these and other objects in view, which will appear as the nature of the invention is better understood, the same consists in certain novel features of construction, as hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification and in which corresponding parts are denoted by like designating characters, is illustrated the preferred form of the embodiment of the invention capable of carrying the same into practical operation, it being understood that the invention is not necessarily limited thereto, as various changes in the shape, proportions, and general assemblage of the parts may be resorted to without departing from the principle of the invention or sacrificing any of its advantages, and the right is therefore reserved of making all the changes and modifications which fairly fall within the scope of the invention and the claims made therefor.

In the drawings thus employed, Figure 1 is a plan view. Fig. 2 is a plan view with cover removed. Fig. 3 is a longitudinal sectional side elevation. Fig. 4 is a sectional detail of the cutter-operating mechanism.

In the improved device is comprised a supporting frame or casing 10 of any approved form and size and having mounted for rotation therein a main shaft 11, having an actuating-spring 12 and gear 13. The shaft 11 extends beyond the casing 10 and has a square, oblong, or other irregular-shaped terminal 15

outside the casing to provide for the attachment of a winding-arm 16, the latter having a slot 17 at one end with one end of the slot enlarged. By this means when the arm 16 is moved into one position the shaft 11 will freely rotate in the enlarged end of the slot, and then when placed in the other position the shaft will be engaged by the contracted portion of the slot and rotated with the lever-arm. By this simple means when the spring is to be wound up the lever-arm will be adjusted with the contracted portion of the slot in engagement with the square or oblong end 15 of the spring-shaft and the latter rotated thereby, and when the winding is completed the lever-arm will be adjusted to bring the enlarged end of the slot opposite the spring-shaft, so that the shaft when slowly rotating with the uncoiling of the spring will not carry the lever-arm with it.

A stop-spring 18 is attached to the arm 16 to yieldably engage the terminal 15 and retain it in place with sufficient force to prevent accidental displacement when in use.

Attached to the forward end of the frame 10 and preferably at an angle thereto is a plate 19, having at its forward end spaced finger-bars 20, having their upper surfaces "shear-faced" to cooperate with the correspondingly-spaced cutter-teeth 21 on the cutter-bar 22, the latter mounted for reciprocation transversely of the plate 19 in the ordinary manner of hair-clippers. At its rear end the cutter member 22 is provided with a transverse guide-channel 23 and central cam-socket 24, and the frame 10 is provided with a cap-plate 25, having a depending guide-rib 26 engaging the channel 23. By this means when the cap-plate is secured in position, as by clamp-screws 27, the cutter-plate will be supported in position, but free to be moved transversely, as will be obvious.

Projecting from the plate 19 are spaced standards 28 29, forming bearing-posts for a shaft 30, having at one end a cam 31, operatively engaging the cam-socket 24 and at the other end a bevel-pinion 32. By this arrangement it will be obvious that when the shaft 30 is rotated the plate 22 will be reciprocated over the plate 19 and provide for the clipping

action of its teeth 21 over the stationary shear-teeth 20.

Between the gear 13 and pinion 32 a train of gears 33, 34, 35, and 36 are interengagingly mounted upon counter-shafts 37 38 to provide for the transmission of the motion of the spring 12 to the shaft 30 and thence to the plate 22 and its teeth 21.

Pivoted at 39 in the frame 10 is a lever 40, with one end 41 bearing upon the gear 36 and the other end extended into a finger or thumb plate 42, and with a spring 43 for yieldably maintaining the end 41 normally in engagement with the gear 36. The spring 43 will be of sufficient strength to resist the action of the spring 12 and hold the gearing stationary, so that the plate 22 will also remain stationary while the lever 40 is in action. The extended end 42 of the brake-lever is positioned convenient to one of the fingers of the hand which holds and guides the implement, so that the motion is thus completely under the control of the operator, which ceases, as will be obvious, immediately upon the release of the brake-lever. By this means the motion continues only so long as required, so that no waste of the power of the spring occurs.

Attached to the frame 10 opposite some part of the spring 12 is an automatic stop mechanism consisting of a lever 44, pivoted intermediately at 45, with one end, 46, preferably hook-shaped and extendible over the gear 34, and with the other end, 47, for engagement by the outer whirl of the spring 12 when the latter is nearly unwound or in its expanded condition. Projecting from the gear 34 is a stop-pin 50, into whose path the hooked end 46 of the lever 44 is projected when the spring 12 is sufficiently expanded to engage the opposite end 47 and move it outwardly. A spring 49 is connected to hold the lever 44 normally in its inoperative or withdrawn position or with the hooked end 46 outside the path of the stop-pin 50. The terminal 47 will be so positioned relative to the spring 12 that the outer "whirl" or coil of the latter will engage the same sufficiently remote from its fully-expanded position to cause the stoppage of the cutter mechanism when in full action, and thus prevent the action from becoming weak at the last part of its period of operation. In other words, with this simple attachment it is possible to stop the action while the spring still contains considerable force, so that no danger exists of the cutter-bar becoming weak in its action at the last portion of its period of operation. The operator is thus given timely and unmistakable notice that the spring requires rewinding. This is an important advantage in devices of this character, as any weakening of the action at any period would be very detrimental to work being performed and would result in an uneven cutting and cause the clipped hair to present a "ragged" appearance.

To permit winding of the spring 12 without actuating the cutting apparatus, the pinion 33 is mounted to run loosely upon the shaft 37 and the gear 34 is provided with a dog 51 to engage the ratchet-disk 52, carried by the under side of the pinion, and interlock the gear and the pinion for simultaneous rotation under the unwinding influence of the spring, but permitting of the free reverse rotation of the pinion 33 independently of the gear 34 during winding of the spring. When the spring is wound up and under tension, the apparatus is held inactive by the lever 40, which engages the gear 36, so that by manipulation of this lever the spring-motor may be thrown out of operation at the will of the operator.

The casing 10 will be formed of a size and shape to be readily grasped by the hand of the operator and may be provided with suitable finger and thumb engaging lugs similar to those employed upon ordinary hand-operated "clippers," if required; but as the form and purpose of these appurtenances are so well understood it is not deemed necessary to illustrate them.

In this device it will be obvious a very simple, compact, and convenient implement is produced admirably adapted to the purposes described and which may be operated by any person skilled in the operation of hair-clippers of the ordinary construction.

The device is adapted to all the purposes for which hair-clippers are usually employed and may be constructed in various sizes and forms, as required.

The casing will usually be of metal suitably formed and ornamented to present a pleasing appearance.

Having thus described my invention, what I claim is—

1. A device of the class described, including a cutting apparatus, a mechanical motor for actuating the same, and means controlled by the motor for stopping the operation of the cutting apparatus at a predetermined period in the operation of the motor.

2. A device of the class described, including a cutting apparatus, a mechanical motor for operating the same, and means controlled by the motor for stopping the operation of the cutting apparatus when the power of the motor has decreased to a predetermined degree.

3. A device of the class described, including a cutting apparatus, a spring-motor therefor, and means controlled by the spring for automatically stopping the operation of the cutting apparatus when the power of the spring has decreased to a predetermined degree.

4. A device of the class described, including a cutting apparatus, a spring-motor, a train of gears extending between the spring-motor and the cutting apparatus, and means controlled by the spring of the motor and acting upon one of the gears to stop the operation of

the cutting apparatus when the power of the spring has decreased to a predetermined degree.

5. A device of the class described, comprising a cutting apparatus, a spring-motor including a coil-spring, and means located in the path of one of the coils of the spring for actuation thereby to stop the operation of the cutting apparatus when the power of the spring has decreased to a predetermined degree.

6. A device of the class described, comprising a cutting apparatus, a spring-motor therefor including a coil-spring, and means to stop the operation of the cutting apparatus when the power of the spring has decreased to a predetermined degree and including a lever having a portion located in the path of one of the coils of the spring to actuate the controlling means.

7. In a device of the class described, the combination of a supporting-frame, a cutting apparatus carried by said frame, an actuating-spring, a train of gears connected to transmit motion from said spring to said cutting apparatus, a stop upon one of said gears, and a stop member positioned to be projected into the path of said stop-pin by the expansion of said spring, whereby the motion of said gearing is automatically stopped when the spring is distended to a certain predetermined extent.

8. In a device of the class described, the combination of a supporting-frame, an actuating-spring, a cutting apparatus carried by said frame, a train of gears connected to transmit motion from said spring to said cutting apparatus, a stop upon one of said gears, and a spring-controlled lever positioned to be projected into the path of said stop by the expansion of said spring.

9. In a device of the class described, the combination of a supporting-frame, an actuating-spring, a cutting apparatus carried by said frame, operating means between said spring and cutting apparatus, a winding crank-arm carried by the shaft of said spring and provided with a slot enlarged at one end and adapted for positive engagement with the spring-shaft when moved to one position and disengaged therefrom when moved into another position.

10. In a device of the class described, the combination of a supporting-frame, an actuating-spring, a cutting apparatus carried by said frame, operating means between said

spring and cutting apparatus, a winding crank-arm carried by the shaft of said spring and provided with a slot enlarged at one end and adapted for positive engagement with the spring-shaft when moved to one position and disengaged therefrom when moved into another position, and a stop-spring for yieldably coupling said crank-arm to said spring-shaft.

11. In a device of the class described, the combination with a frame, of a cutting apparatus carried thereby, a spring-motor therefor having its winding-shaft projected externally through the casing and reduced to a polygonal shape, and a winding crank-arm having a keyhole-slot for the reception of the reduced projected end of the shaft and capable of movement to receive the shaft in either end of the keyhole-slot.

12. In a device of the class described, the combination with a frame, of a cutting apparatus carried thereby, a spring-motor therefor having its winding-shaft projected externally through the casing and reduced to a polygonal shape, a winding crank-arm having a keyhole-slot for the reception of the reduced projected end of the shaft and capable of movement to receive the shaft in either end of the keyhole-slot, and a leaf-spring connected to the crank-arm and bearing upon the outer end of the winding-shaft.

13. In a device of the class described, the combination with a frame, of a stationary cutter-bar having shear-fingers, bearings upon the bar in rear of the fingers, a reciprocatory cutter member having a tongue-and-groove slidable connection with the cutter-bar and provided in its upper face with a transverse channel and a cam-socket in the rear of the channel, the forward upper portion of the frame having a pendent flange received in the channel of the cutter-bar to form a guide therefor, a spring-motor upon the frame, and a drive-shaft mounted in the bearings with its rear end operatively connected to the spring-motor and provided at its forward end with a cam working in the cam-socket of the cutter-bar.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

HARRY E. CONRAD.

Witnesses:

HARRY DOERR,
JNO. F. CONRAD.