No. 879,254. PATENTED FEB. 18, 1908.

J. L. GAUTHIER.

MANUALLY CONTROLLED DENTAL ENGINE.

APPLICATION FILED MAY 18, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

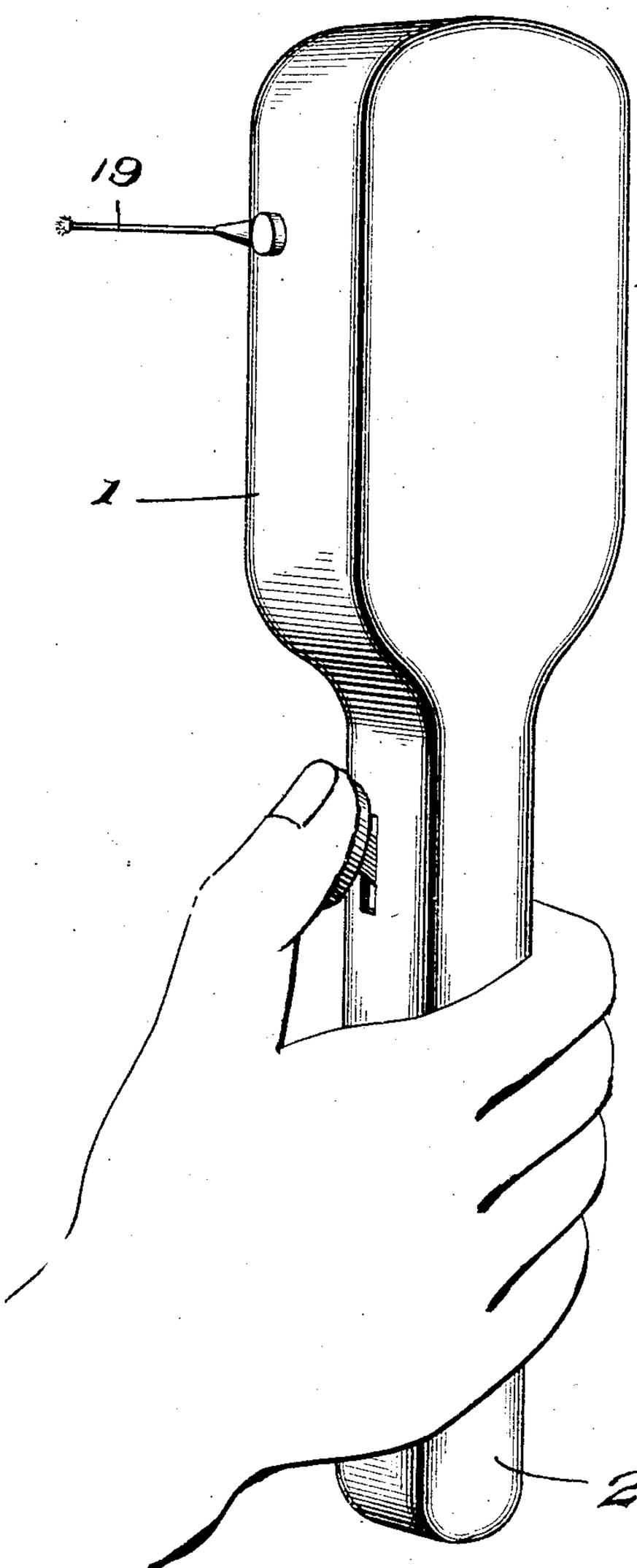
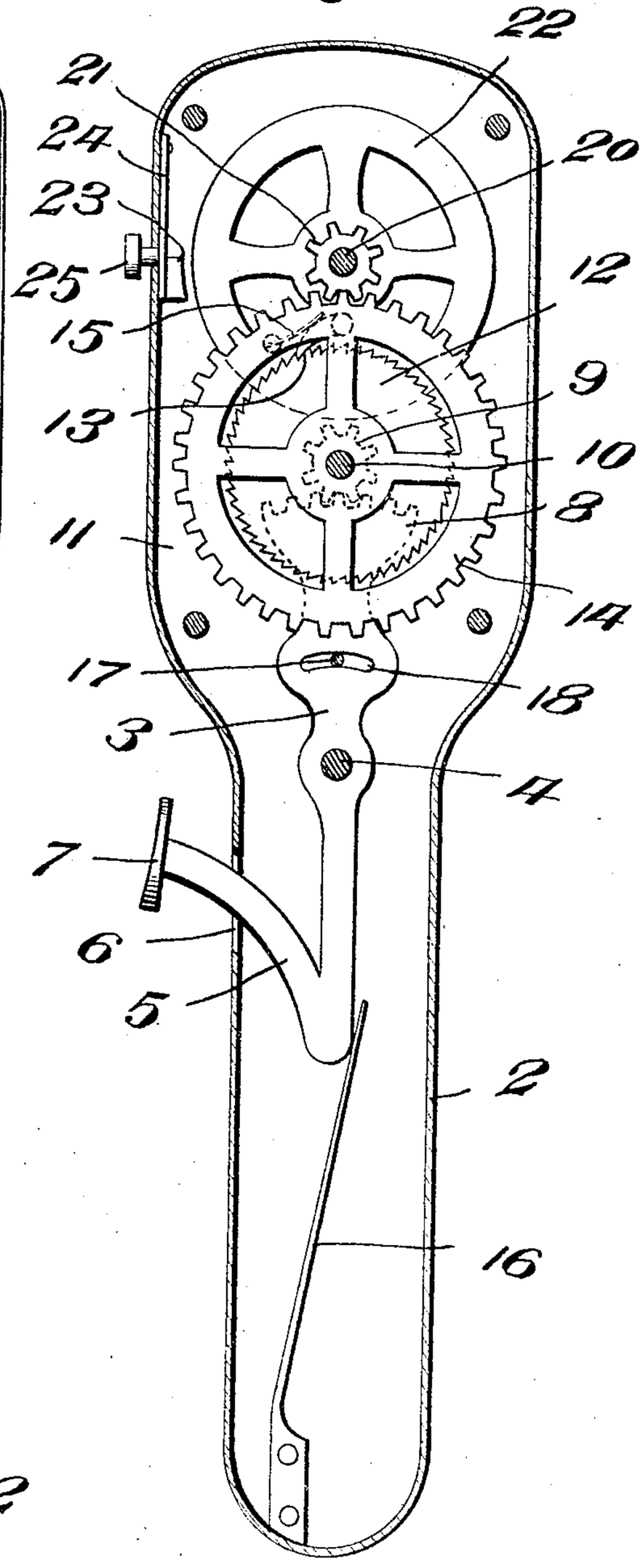


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 4.

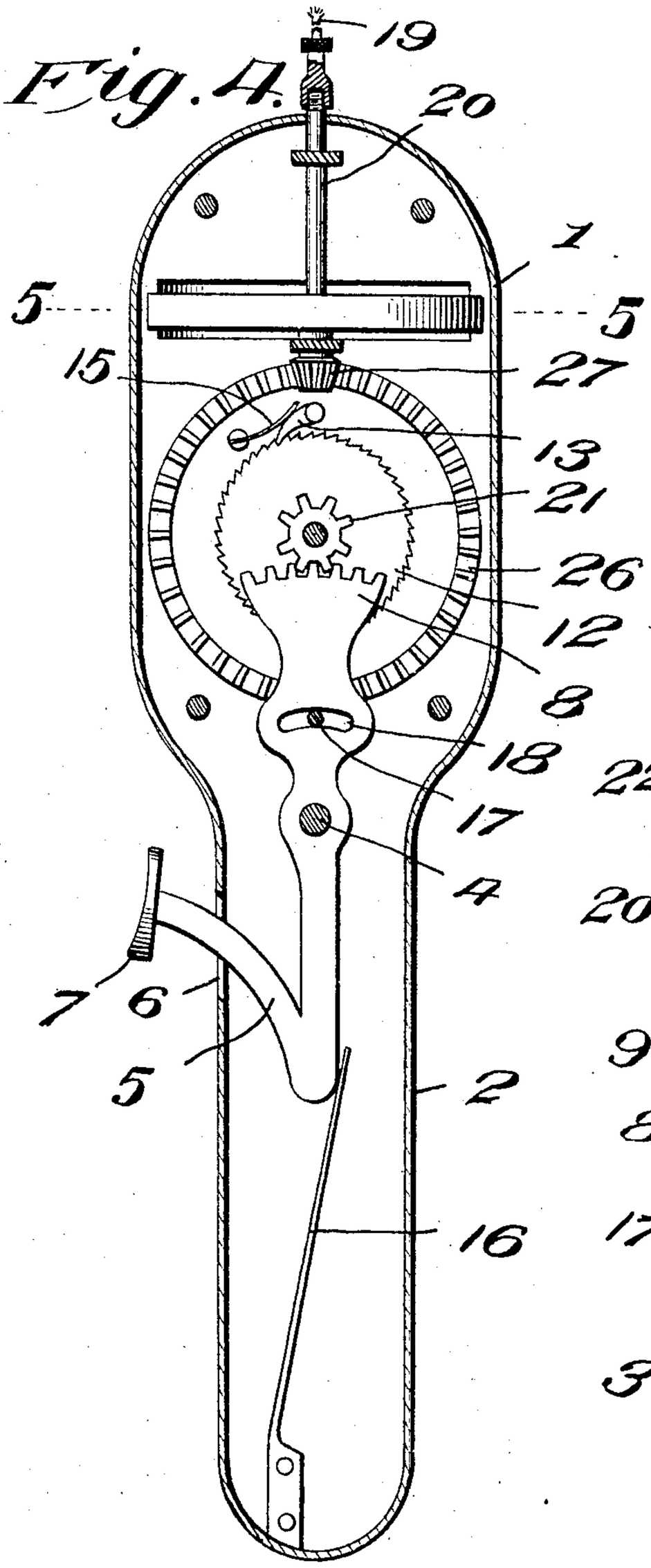
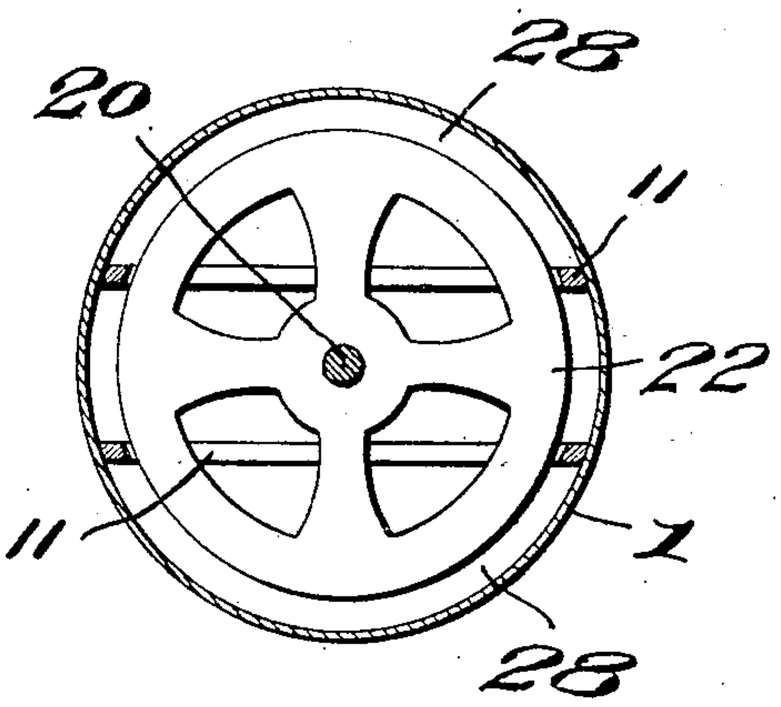


Fig. 5.



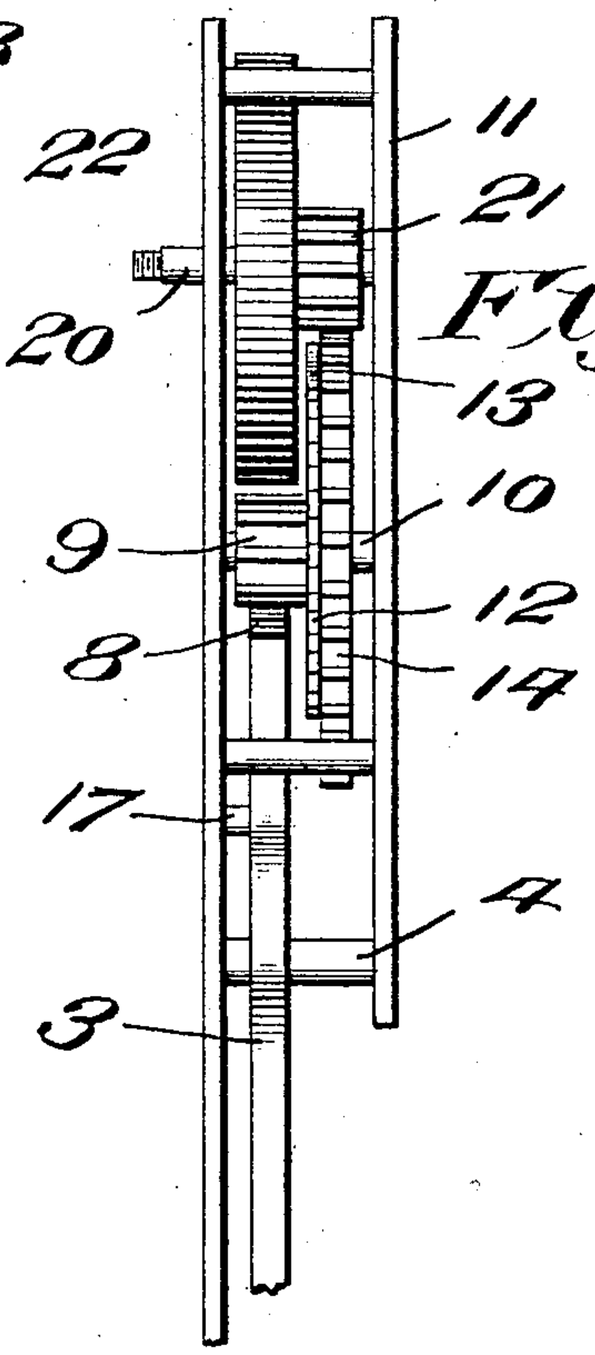


Fig. 3.

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UNITED STATES PATENT OFFICE.

JEAN L. GAUTHIER, OF WASHINGTON, DISTRICT OF COLUMBIA.

MANUALLY-CONTROLLED DENTAL ENGINE.

No. 879,254. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed May 18, 1907. Serial No. 374,364.

To all whom it may concern:

Be it known that I, JEAN LOUIS GAUTHIER, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Manually-Controlled Dental Engines; 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.

My invention relates to new and useful improvements in manually controlled and operated dental engines and my object is to provide means for rapidly rotating a drill or cleaning brush, by directing pressure on the operating parts with the thumb.

A further object is to provide means for increasing the revolution of the drill over the natural speed produced by the operating mechanism and a still further object is to provide means for rotating the drill, etc., in one direction, while the operating mechanism is given an intermittent rotary movement through the medium of a rocking lever.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the claims.

In the accompanying drawings which are made a part of this application, Figure 1 is a perspective view of my improved engine showing the same in operation. Fig. 2 is an elevation thereof, with one face of the casing removed. Fig. 3 is an edge elevation of the operating parts of the engine removed from the casing. Fig. 4 is an elevation of that form of engine having the drill extended from one end thereof, the casing being shown in section, and, Fig. 5 is a sectional view as seen on line 5—5, Fig. 4.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates a casing, one end of which is reduced in size to form a handle 2, so that the casing may be readily grasped, and retained by the operator.

Located in the enlarged portion of the casing is my improved drill, or cleaning brush operating mechanism, which consists of a lever 3, said lever being pivotally mounted upon a shaft 4 extending laterally through the center of the casing 1, one end of said lever being provided with a curved arm 5, which extends through a slot 6 in one wall of the handle portion 2, and is provided with a disk, or thumb plate 7, at its free end, whereby pressure may be applied on the lever to reciprocate the same.

The upper end of the lever 3 is enlarged and provided with a rack bar 8, which is adapted to mesh with a pinion 9 carried by a shaft 10, which shaft is fixed in a frame 11, carried within the casing 1.

One end of the pinion 9 has fixed thereto a ratchet wheel 12, which is adapted to cooperate with a pawl 13 pivotally mounted on a driving gear 14, mounted on said shaft 10 said pawl being held in engagement with the ratchet wheel in any preferred manner, as by securing a spring 15 to one edge of the driving gear 14 and directing the free end of the spring over the pawl 13 and in engagement therewith, under tension. By this construction it will be seen that when pressure is applied to the thumb plate 7, the lever 3 will be rocked upon the shaft 4 and the upper end or rack bar moved to the left of the vertical center of the casing, which will result in rotating the pinion 9 and ratchet wheel carried thereby to the right and as the pawl is held in engagement with the ratchet wheel and is fixed to the driving gear, said driving gear will be correspondingly driven to the right and as soon as the lever has been moved to the left its fullest extent, the pressure is released from the thumb plate 7, whereupon a spring finger 16, fixed at its lower end to the handle section and having its free end in engagement with that end of the lever 4 carrying the arm 5, will return the lever 3 to its initial position and move the arm 5 outwardly through the slot 6, the lateral movement of the lever 3 being limited by means of a stop pin 17 extending through an elongated opening 18 in the lever at a point above the shaft 4.

When the lever is returned to its initial position, the pinion 9 and ratchet wheel are given a reverse movement, in which instance the pawl will yield and drag over the edge of the ratchet wheel, thereby allowing the driving gear 14 to continuously move in one direction and by continually rocking the lever upon its bearing shaft, the driving gear 14 will be given a continuous rotation.

When the cleaning brush or drill 19 is to extend from one face of the casing, a drill shaft 20 is rotatably mounted in the frame 11 and one end thereof extended through the casing 1 and arranged to receive the shank of the drill, and in order to rotate the drill shaft 20, a pinion 21 is fixed thereto and

placed in mesh with the driving gear 14, so that when the driving gear is rotated, the drill shaft 20 will be correspondingly rotated and in order to increase the revolution of the drill shaft beyond the natural rotation thereof by the driving gear 14, and at the same time cause the drill to rapidly rotate when the ratchet wheel and operating parts therefor are on their reverse movement, a balance wheel 22 is likewise fixed to the drill shaft 20, so that after the drill shaft is started, the momentum of the balance wheel will cause the drill shaft to rotate a certain number of revolutions after the operation of the lever is stopped. It will further be seen that by providing the balance wheel 22, the revolutions of the drill will be more uniform, and any sudden stoppage of the drill prevented. If, however, it is desired to immediately stop the rotation of the drill, I provide a brake shoe 23, which is secured to one end of a spring bar 24, the opposite end of said bar being fixed to one wall of the casing, and when it is desired to quickly stop the rotation of the drill, the shoe 23 is moved into engagement with the periphery of the balance wheel 22, this result being accomplished by directing pressure on a press button 25 extending through one wall of the casing, the inner end of the press button being secured to the spring bar 24.

In Figs. 4 and 5 of the drawings, I have shown the drill as secured to operating parts extending from the forward end of the casing, instead of from one side thereof, and, in this instance, the drill shaft 20 is extended parallel with the longitudinal axial plane of the casing 1, and instead of employing a driving gear with the teeth on the peripheral edge thereof, I provide a bevel gear 26, with which is adapted to mesh a bevel pinion 27, secured to the inner end of the shaft 20, and in this construction, the bevel gear is placed on the opposite side of the driving mechanism from that occupied by the driving gear 14.

When the drill shaft is extended from the forward end of the casing, the balance wheel 22 extends in a horizontal position and each face of the casing 1 is provided with a curved cavity 28 for the reception of the balance wheel.

It will thus be seen that I have provided a very cheap and economical form of dental engine and one that can be readily and positively operated by directing manual pressure on parts of the engine, and while the engine is adapted more particularly for use in cleaning teeth, it will be readily understood that the same may be employed for drilling or other purposes.

My dental engine will be found to be reliably efficient for a large number of purposes, and that it will develop a great amount of power, and that there are but very few parts, each being of the simplest character and construction.

What I claim is:

1. In an engine of the class described, the combination with a drill shaft, a balance wheel on said shaft and a pinion fixed to said shaft; of a driving gear adapted to mesh with said pinion, a ratchet wheel, a pawl pivotally secured to said driving gear one end of which is adapted to engage the ratchet wheel, whereby the driving gear will be given a rotating movement, while the rotation of the ratchet wheel is intermittent, a pinion fixed to said ratchet and means to intermittingly rotate said pinion and ratchet, whereby the drill shaft will be operated.

2. In a dental engine of the class described, the combination with a drill shaft, a pinion fixed to said shaft and a balance wheel fast on said shaft, of a driving gear adapted to mesh with said pinion, a lever pivotally mounted below said driving gear, said lever having an elongated opening above its pivot point, a stop pin extending through said opening, adapted to limit the swinging movement of the lever, means coöperating with the upper end of said lever and driving gear to rotate said driving gear and an arm integral with the lower end of said lever and extending laterally therefrom, whereby pressure may be applied to the lever and the same rocked on its pivot point.

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

JEAN L. GAUTHIER.

Witnesses:
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L. W. ANDERSON.