

(No Model.)

3 Sheets—Sheet 1.

A. RETTER.
DENTAL DRILL.

No. 423,344

Patented Mar. 11, 1890.

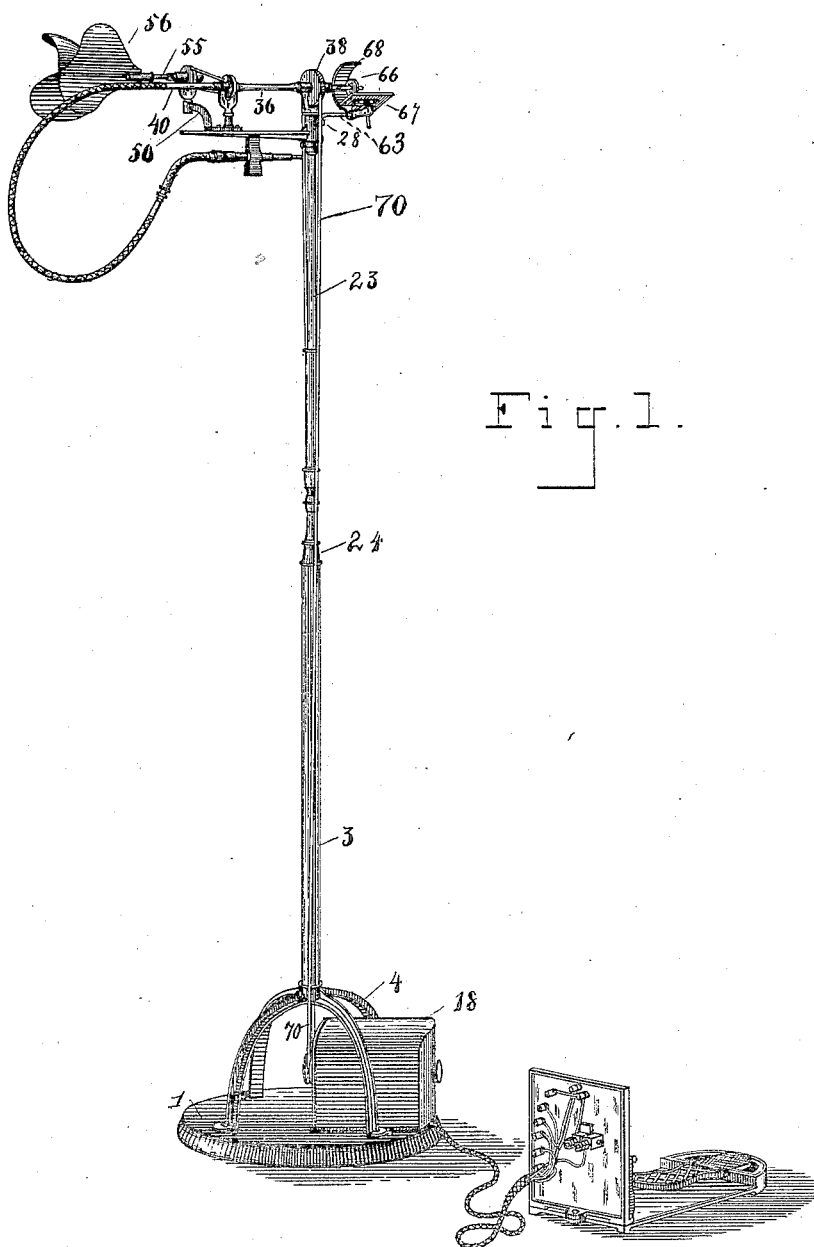


Fig. 1.

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Mayne V. Ridgway

Inventor:
Arwed Retter
by *Knights Bros*
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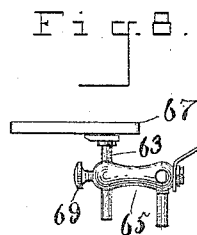
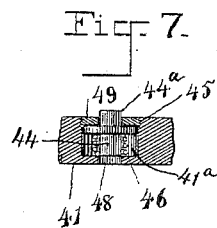
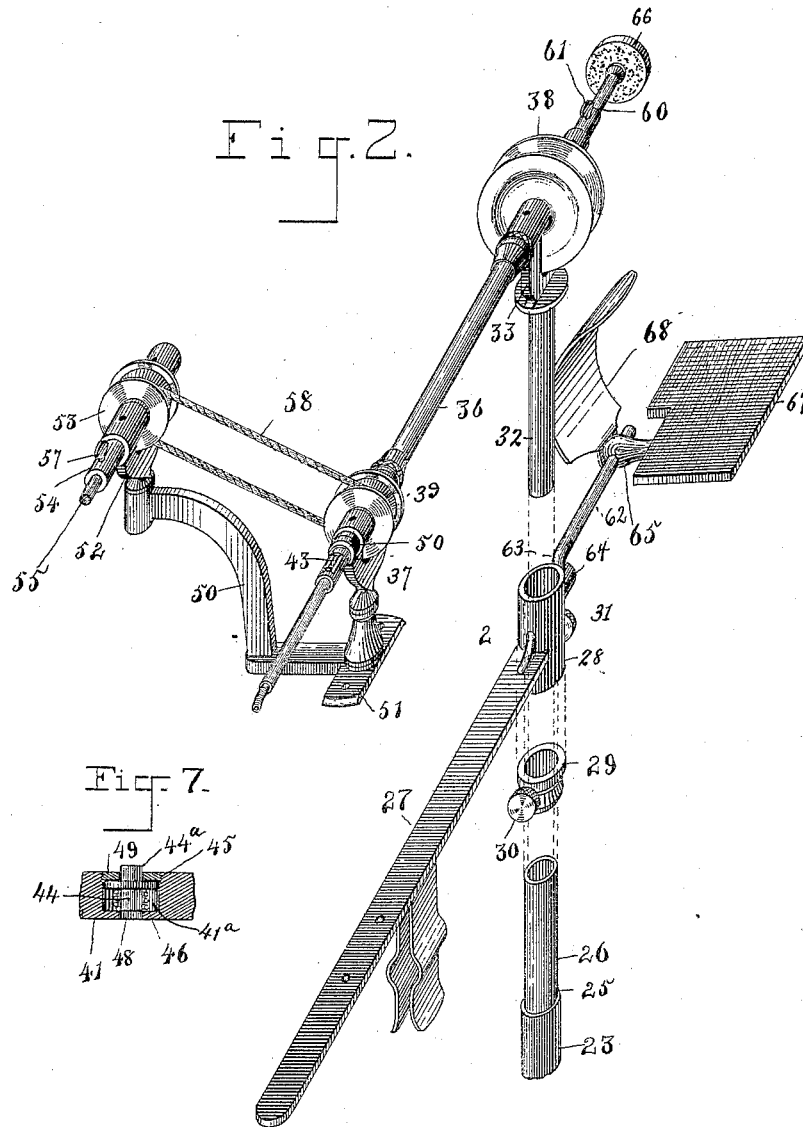
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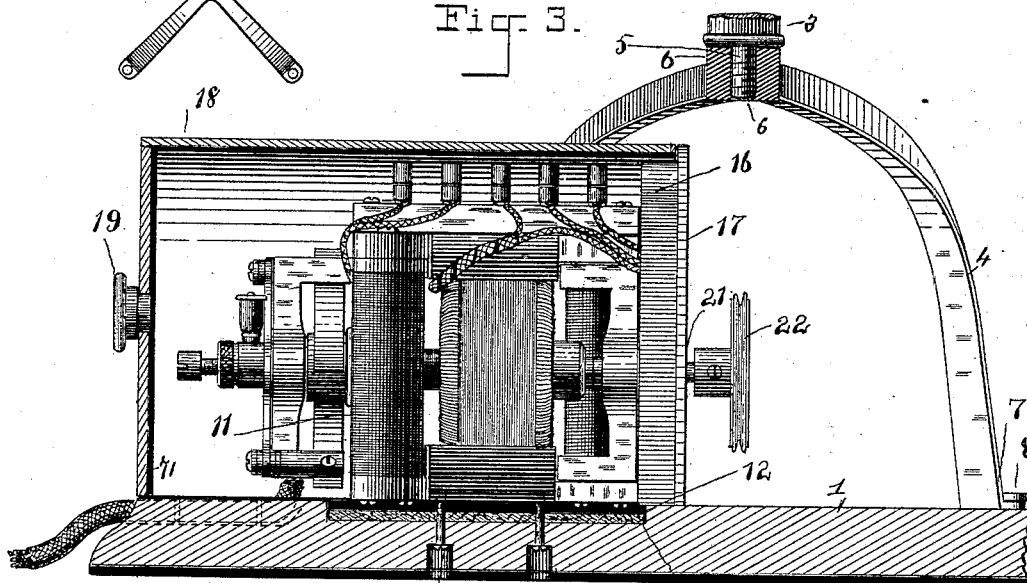
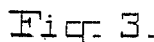
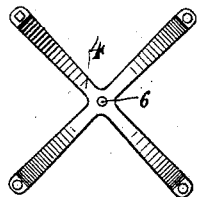
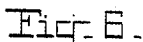
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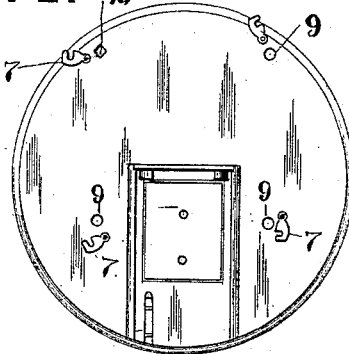
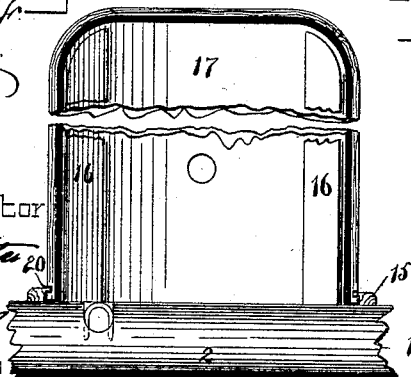
Witnesses Fig. 4.

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UNITED STATES PATENT OFFICE.

ARWED RETTER, OF UTICA, NEW YORK.

DENTAL DRILL.

SPECIFICATION forming part of Letters Patent No. 423,344, dated March 11, 1890.

Application filed July 10, 1889. Serial No. 317,023. (No model.)

To all whom it may concern:

Be it known that I, ARWED RETTER, a citizen of the United States, residing at Utica, county of Oneida, State of New York, have invented certain new and useful Improvements in Dental Drills, of which the following is a specification.

My invention relates to various improvements in several parts of a dental engine, whereby they are made to co-operate in a more economical and satisfactory manner than is the case with devices of the kind now in the market.

My invention consists, first, in an improved form of base or foot constructed substantially as hereinafter described and provided on its under side with a rubber undersole or pad extending over the whole under surface of the supporting base or foot, the object being to provide a cushioning device for the engine, and thus greatly improve its working capacity by dispensing with all shock when the upright or standard sways or tilts. I also provide in this connection a second cushioning device set into the base from the upper side, on which rests the electric motor for driving the drill, this cushioning device consisting of a piece of woolen or other cloth of the requisite thickness surmounted by a plate of rubber similar to that employed on the lower surface of the base. This cushioning device serves to counteract any pounding movement of the motor.

My invention also consists in the connecting and disconnecting devices between the shaft and power-receiving pulley and the flexible shaft of the drill, the object of this part of my invention being to provide a simple and durable construction thoroughly efficient when the engine is in operation and which may be easily disconnected when desired.

My invention consists in other details hereinafter more particularly described, and pointed out in the claims.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 is a perspective view of my improved dental engine. Fig. 2 is a perspective view, to a larger scale, of certain details. Fig. 3 is a side elevation partly in section. In this view I have broken the standard to bring the upper and lower portions of the engine nearer

together. Fig. 4 is a cross-section of the motor-containing box. Fig. 5 is a top view of the base or foot. Fig. 6 is a top view of the tripod. Figs. 7 and 8 are detail views.

In the drawings 1, represents a base or foot for supporting the engine, provided on its under side with a rubber cushion 2, fastened or secured to the base by gluing or in any other suitable manner.

A standard 3, supported upon the legs 4, which branch outwardly and downwardly therefrom, supports the dental apparatus or engine at its upper end, as shown in Figs. 1, 2, and 3. The standard 3 is connected to the legs or tripod 4 in the manner shown in Fig. 3, the standard being provided with a male screw 5, which fits into the female screw 6 of the tripod. The legs or tripod 4 extend outwardly and downwardly, as aforesaid, and are attached to the base or foot 1 by means of hooks or latches 7, which are adapted to interlock with the legs and which are supported on suitable projections or shoulders 8, secured to the aforesaid base or foot. The legs also extend into the base or foot, the latter being provided with openings 9 for the reception thereof.

At 10, I provide a square hole instead of a round hole, as shown in the other places, for the better securing and locking of the parts together. This construction is shown in Fig. 5 of the drawings.

The motor which I employ in operating my dental engine is shown at 11. It rests upon a cushioning device set within the base. This cushioning device is composed of the rubber shield 12, mounted upon the woolen or other flexible shield 13, the two shields, one above the other, being located in a cavity corresponding in size to the cushioning devices and being located in the upper surface of the base. The motor rests upon this cushion and is secured in position by means of the screws 14, set into the base, as shown, from the bottom.

For inclosing the motor and for obtaining easy access thereto I provide a case constructed in the following manner: Upon the base I provide two tracks 15, which extend inwardly from the edge, and at the inner end of these tracks are standards 16, which support a back or end 17, extending between

them. The balance of the casing is shown at 18, and at 19, I provide a handle for removing the same. The casing 18 is provided with slots 20, which are adapted to fit over the projecting portions of the tracks 15, so that the operator can by taking hold of the casing at 19 draw it off or thrust it on at will. It is shown in place in Fig. 3. Extending through the end 17 of the casing is a shaft 21 of the motor, and upon the end of this shaft is located a power-transmitting pulley 22. It will be seen by referring to the drawings, more particularly Figs 1, 3, and 5, that the motor is placed in between the legs of the tripod and the power-transmitting pulley occupies a central position relatively to the superimposed standard 3. The said standard 3 is provided with an extension 23, which is screwed onto the lower portion at 24. The upper part of the extension 23 is provided with a shoulder at 25 and a second extension 26, as shown in Figs. 2 and 3.

The main supporting-bracket is shown at 27, and is provided with a sleeve 28, which fits over the extension 26. The bracket is vertically adjustable upon the upright, and is secured in any desired position by means of the sliding sleeve 29, provided with a set-screw 30. Normally the adjusting-sleeve 29 rests upon the shoulder 25 and the bracket-sleeve 28 upon the top of the sleeve 29; but for the purposes hereinafter described it is desired at times to adjust these parts, and for these purposes the bracket 27 can be raised or lowered and adjusted vertically and in any desired horizontal plane by means of the aforesaid sliding sleeve 29 and set-screw 30. A locking thumb-screw 31 is also provided for locking the bracket in position and preventing it from swinging after it has been set in the desired place. A spindle 32, extending downwardly from the yoke-support 33, enters the bracket-sleeve 28 and extension 26 and serves as an axis about which the yoke 33 and its supported mechanism may be swung. The spindle 32 is provided with a cap 34, which rests normally upon the top of the bracket-sleeve 28 when the parts are in position and which has an upwardly-extending yoke or forked bearing for a horizontal swing-shaft 35. Inclosing this shaft is a sleeve 36, which extends from the yoke 33 to the yoke 37. It is supported at its ends in said yokes. The power-receiving pulley is shown at 38, and it is connected by the shaft 35 with a pulley 39, supported and journaled in the yoke 37, and which will be hereinafter referred to. The shaft 35 is made hollow at its outer end 40, and is adapted to receive the finger 41, which forms the inner terminus of the flexible shaft 42. A chamber 41^a in this finger is provided with a spring-button 44, (shown in detail in Fig. 7,) and is adapted to interlock with the shaft 35 through the medium of the slot 43 at the outer end of the said shaft. This slot is shown in Fig. 2. The automatically-operating locking-button consists of a stud 44^a, extending above

the surface of the finger 41 and having at 45 an annular collar which seats upon a spring 46, which spring keeps the stud 44^a normally in an elevated position and prevents the parts from being detached, but which can be readily pressed down, thus providing for the easy removal and disconnecting of the parts when it is desired. The button 44 is confined within a chamber 41^a by a washer 49. An opening 48 in said chamber receives the stud 44^a when the button is thrust down. The washer 49 can of course be removed when it is desired to repair the button.

A supplementary bracket 50 is attached by means of screws or otherwise at a point 51 to the bracket 27 and extends outwardly and upwardly, and is provided at its upper end with a yoke 52. In this yoke is suspended a pulley 53, said pulley being mounted on a horizontal shaft extending through the yoke. This shaft is hollow and is adapted to receive a spindle 55 of a fan 56. The fan can be adjusted to any desired position by means of the thumb-screw 57. A band 58 connects pulleys 39 and 53 together, whereby motion is communicated from the working-shaft to the fan. The supplementary bracket 50, being supported on the main bracket 27, will swing in the same horizontal arc as that described by the main bracket, and the movement of one will cause a corresponding movement in the other, as they both center from the same point, and the fan-shaft, with its fan mounted thereon, will be turned and will swing therewith, whereby a cooling-current of air may be directed from any desired angle upon the patient.

At 66, I show a grinding or polishing wheel mounted upon a shaft 60, the latter being an extension of the shaft 35 and being locked thereto by means of the thumb-screw 61. At 62, I show a smaller bracket supported by means of a downwardly-extending finger or sliding stem in a socket 64, which projects from the bracket-sleeve 28. This finger is square and the corresponding opening in the socket 64 is similarly constructed, in order to hold the bracket 62 rigidly in place.

Upon the outer end of the bracket 62, I mount a cross-piece 65, which holds the sliding stem or arm 63 of the tool-rest 67 for the tool or implement while it is being sharpened.

At 68, I provide a shield or guard to prevent the scattering of the sparks emitted from the grinding-wheel when in operation.

The rest 67 is adjustable and held in place by means of the thumb-screw 69.

The band or cord for transmitting the power from the pulley 22 to the pulley 38 is shown at 70. This power-transmitting band or cord 70 is made of non-conducting material, and, the motor being inclosed in a casing having a non-conducting lining 71, it will be seen that there is no possibility of an electric current being communicated to the upright standard, to the brackets 27 36, or to any other parts of the engine proper.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination of a dental drill, substantially as hereinbefore shown and described, with a supporting-standard and a base or foot having a rubber or other cushioning device on its lower surface.

2. In combination with a dental drill, substantially as hereinbefore shown and described, a vertical supporting-standard, a base or foot to which the standard is attached, and an electric motor for operating the engine, said motor resting on the base and provided with intermediate cushioning devices, substantially as and for the purposes set forth.

3. In combination with a dental drill, a standard for supporting the same, a base or foot upon which the standard rests, an electric motor connected to the engine, the cushioning devices 12 and 13, and locking-screws 14, for locking the motor to the aforesaid base or foot, substantially as set forth.

4. In combination with a dental drill, substantially as hereinbefore shown and described, a vertical standard for supporting the same, a tripod, a base or foot upon which the tripod rests and to which it is attached, and a motor resting on the base and located between the legs of the tripod and provided with an inclosing box or case having a removable cover.

5. The combination, in a dental drill, of

the power-receiving pulley supported, as described, upon the horizontally-swinging bracket, with a supplementary bracket supporting a fan and adapted to be operated by means of the electric motor and arranged to swing with the main bracket, as and for the purposes set forth.

6. The combination, in a dental drill, substantially as hereinbefore shown and described, of the bracket 27, supplementary bracket 50 at right angles thereto, a power-receiving pulley 38, the horizontal shaft 35, the pulley 39, mounted thereon and connected by means of band 58 to the pulley 53, the shafts 54 55, and the fan 56, all adapted to operate substantially as and for the purposes set forth.

7. In a dental drill, the combination of the horizontal shaft 35, having hollow terminus at the outer end and a slot 43 in one side thereof, and the flexible shaft 42, having a finger 41, provided with an automatic locking-button which interlocks with the shaft 35 by means of the slot 43.

8. In a dental drill, the combination of the main horizontal operating-shaft 35, provided with an extension 60, grinding-wheel 59, a tool-holding bracket 67, and a shield or guard 68, the parts being operated and being adjustable as and for the purposes set forth.

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