No. 622,467. Patented Apr. 4, 1899.

H. D. HERMANY.

DENTAL ENGINE.

(Application filed Dec. 30, 1897.)

(No Model.)

Fig. 1.

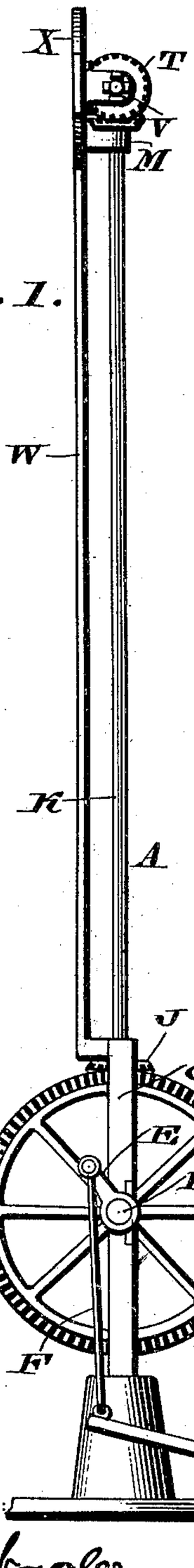

Fig. 3.

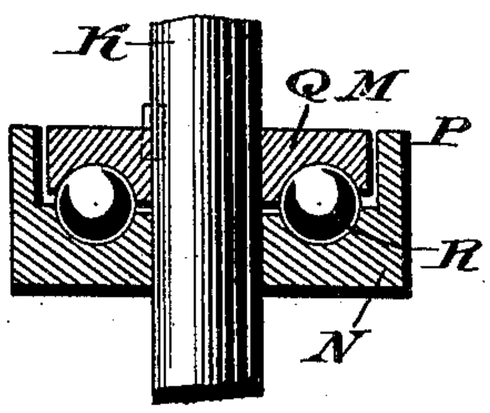

Fig. 2.

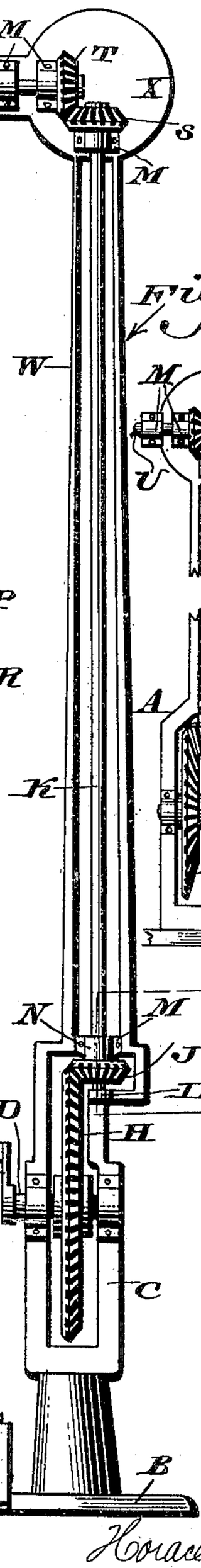

Fig. 4.

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DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 622,467, dated April 4, 1899.

Application filed December 30, 1897. Serial No. 664,577. (No model.)

To all whom it may concern:

Be it known that I, HORACE D. HERMANY, a citizen of the United States, residing in Mahanoy City, in the county of Schuylkill, State of Pennsylvania, have invented a new and useful Improvement in Dental Engines, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of an improved construction of dental engine in which provision is made for a more perfect transmission of power than heretofore by reason of the employment of bevel-gears and their adjuncts, whereby the slipping of the belts or bands or similar power-transmission devices heretofore employed is prevented.

It further consists of novel details of construction, all as will be hereinafter fully set forth, and particularly pointed out in the claims.

Figures 1 and 2 represent front and side elevations of a dental engine embodying my invention. Fig. 3 represents a section on line *x x*, Fig. 2, of a preferred form of ball-bearing and antifrictional device employed. Fig. 4 represents, on a reduced scale, a side elevation of a dental engine with an electric motor applicable thereto.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates a dental engine, the same having the base B, upon which is supported the frame C, the latter having the main shaft D rotatably mounted therein, said shaft having attached thereto the crank-arm E, to which is attached one end of the link F, the other end of the latter being connected to the treadle G, and it will also be apparent that by the oscillation of the said treadle the shaft D will be rotated.

H designates a bevel-gear mounted upon the main shaft D and meshing with the pinion J, which is mounted upon the upright spindle or shaft K, the lower end of the latter rotating in a suitable bearing L, adjacent an offset portion of the frame C.

M designates a preferred form of ball-bearing or antifrictional device located above the bevel-pinion J, the construction of which will be apparent from the sectional view in Fig. 3.

The antifrictional device or bearing M consists of the cup-shaped member N, which is preferably made in sections and bolted together in any suitable manner, as will be understood from Fig. 2, said member N having the upwardly-extending walls P, within which is located the disk or member Q, which has located between it and the cup N the balls R, it being noted that the member Q is keyed or otherwise secured to the spindle K.

The upper extremity of the rod or spindle K has its bearing in the antifriction device M, similar to the sectional view seen in Fig. 3, said upper portion of the spindle having the bevel-pinion S, which meshes with the pinion T, mounted on the laterally-extending spindle U, in the extremity of which is located the universal joint V, by means of which power is transmitted to the dental tool or implement (not shown) manipulated by the operator.

W designates a suitable guard or casing, which extends upwardly and may wholly or partially inclose the upright spindle K, the upper portion of the guard W being provided with the member X, to which the upper bearings M are secured. In Fig. 4 the main shaft D is shown as driven by an electric or other motor A′.

The operation is as follows: The oscillation of the treadle G will cause the rotation of the shaft D and the bevel-gear mounted thereupon. The bevel-gear H, meshing with the pinion J, will rotate the latter, together with the spindle K, power being transmitted by the bevel-pinions S and T to the laterally-extending spindle U, and special attention is called to the fact that by the employment of the bevel-gearing and the antifriction devices located in the manner described there will be no loss of power during the transmission of the same from the main shaft D to the laterally-extending spindle U, which extends to the dental tool or implement (not shown) employed.

The ball-bearing and antifriction devices M (seen in detail in Fig. 2) are employed at each bearing, wherefrom it will be apparent that friction will be reduced to a minimum. It is evident that other antifriction devices may be employed and that further changes may be made by those skilled in the art which will come within the scope of my invention, and I do not therefore desire to be limited in every

instance to the exact structure I have herein shown and described.

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

1. In a dental engine, the combination of a lower upright frame having an upper offset and rigid guard rising from the top of the latter, the upper part of the guard being in the form of a shielding-head, an antifrictional bearing interposed at the base of the guard, similar bearings in different positions on said head at substantially right angles to each other, a main shaft in the lower frame and having a bevel-gear mounted thereon, an upright spindle engaging the lower interposed bearing at the base of the guard and a similar bearing on the head, single pinions mounted respectively on the upper and lower portions of said upright spindle, the lower pinion meshing with said gear and an upper laterally-extending transmitting-spindle on the head having a pinion on the inner end thereof meshing with the single pinion on the upper part of the upright spindle.

2. In a dental engine, the combination of a lower frame having a guard rigidly snpported thereon, a main shaft, an upright spindle, a laterally-projecting spindle, intermeshing gears on said shaft and spindles, and antifrictional bearings for said shaft and spindles, each bearing consisting of a stationary cup through which the shaft or spindle extends and having balls movably mounted therein and a rotatable disk fitted in said cup and held by and movable with the shaft or spindle.

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