(No Model.) 2 Sheets—Sheet 1.

A. W. BROWNE.

DENTAL ENGINE.

No. 558,152. Patented Apr. 14, 1896.

Fig. 1.

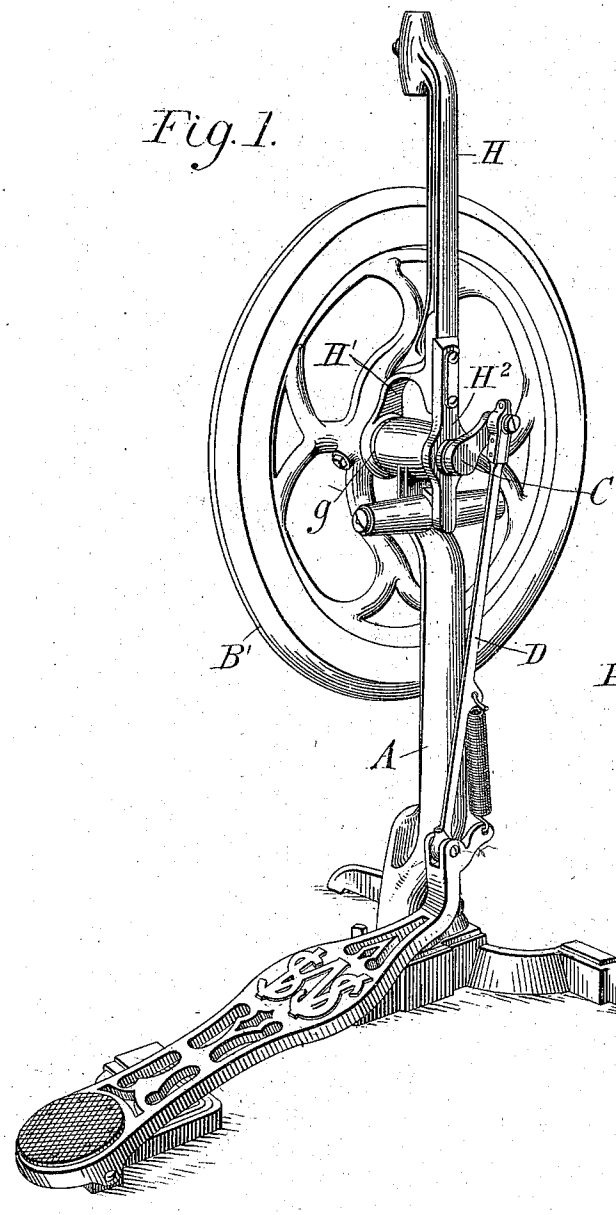
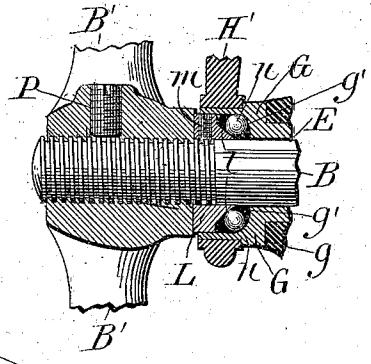


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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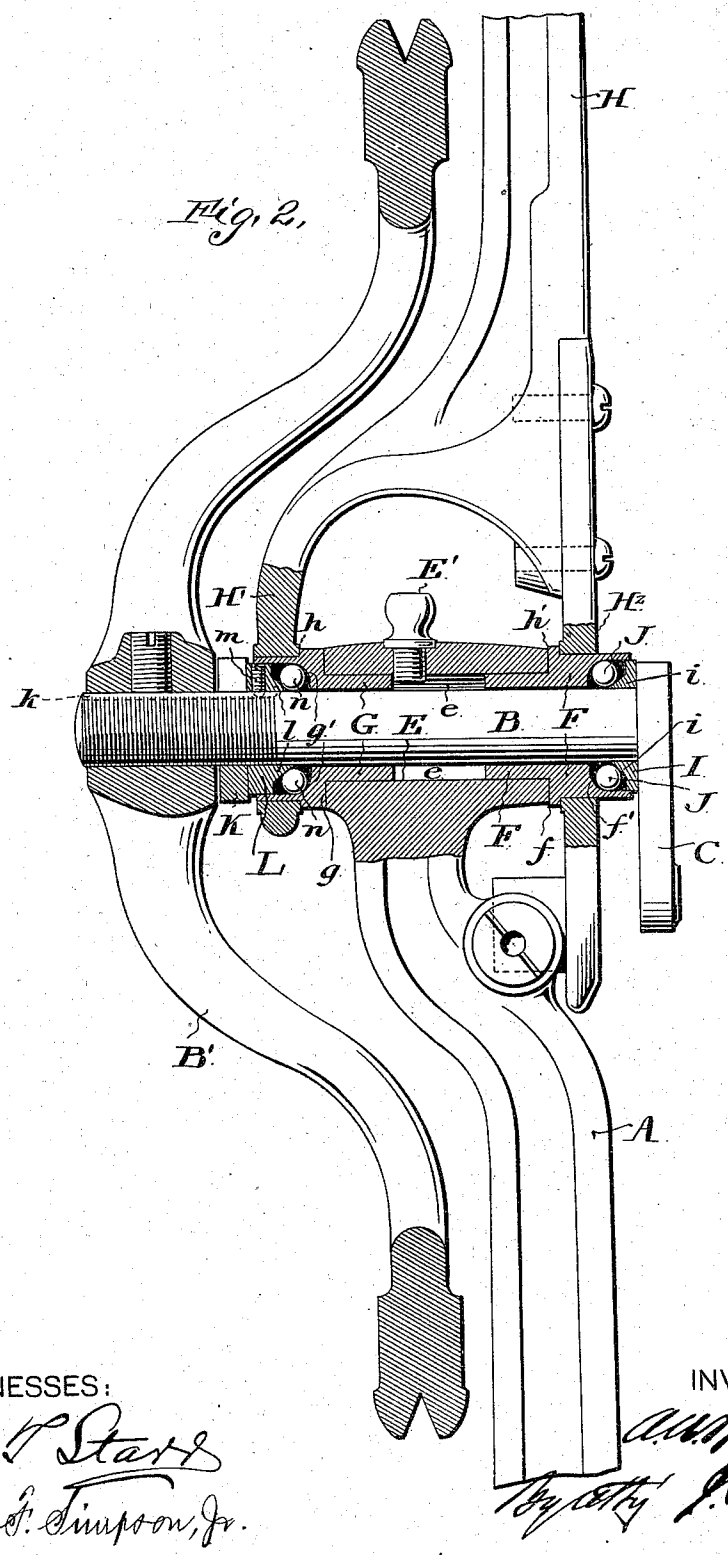
Fig. 2.



WITNESSES:

Ed. F. Starr

Edw. F. Simpson, Jr.

INVENTOR:

A. W. Browne

by Atty J. C. Peyton.

UNITED STATES PATENT OFFICE.

ARTHUR W. BROWNE, OF PRINCE'S BAY, NEW YORK, ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 558,152, dated April 14, 1896.

Application filed October 17, 1895. Serial No. 565,934. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. BROWNE, a citizen of the United States, residing at Prince's Bay, in the county of Richmond and State of New York, have invented certain new and useful Improvements in 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 certain improvements, as hereinafter claimed, applicable to the bearings for the driving-shafts and the journals for the rocking standards of dental engines.

In the accompanying drawings, Figure 1 is a view in perspective of a portion of a suitably-constructed dental engine embodying my invention. Fig. 2 is a view, on a larger scale, partly in elevation and partly in vertical central section, showing those portions of the engine to which my improvements are applied. Fig. 3 is a detail view showing a modification.

As shown in United States Letters Patent No. 460,687, dated October 6, 1891, the engine-frame is partly constituted by a standard A, and the driving-shaft B is supported at the upper end of this standard portion of the engine-frame, while the driving-wheel B′ is secured to one end of the driving-shaft, which has the crank C at its opposite end. Motion is to be imparted to the driving-shaft in any well-known way.

The bearing-opening E at the top of the engine-frame is bushed or provided at its ends with sleeves F G, each of which projects into the frame bearing-opening for a portion only of its length. The unoccupied space within the bearing-opening E about the driving-shaft, between the inner ends of the bearing-sleeves F G, constitutes an oil-chamber *e*, with which the screw-attached oil-inlet tube or nipple E′ communicates. The bearing-sleeves are fitted tightly in the bearing-opening and are provided, respectively, with annular shoulders *f* and *g*, which abut against the frame at the ends of the bearing-opening therein when the sleeves are properly adjusted. The bearing-sleeves do not come in contact with the driving-shaft, the diameter of which is slightly less than the least internal diameter of these sleeves. At and adjacent to their outer ends the bearing-sleeves are of increased internal diameter, these internally-enlarged portions of the sleeves terminating, respectively, by way of curved annular shoulders *f′* and *g′* in the reduced portions of these bearings, which loosely surround the driving-shaft.

The driven-pulley standard or rocking upright H of the engine is mounted by its forks H′ H² to rock about journals formed on the bearing-sleeves F G outside the annular shoulders *h h′* of these sleeves.

At the crank end of the driving-shaft it has suitably fastened to it the collar or short sleeve I, having the annular inclined or "cone" bearing-surface *i*, between which and the bearing-surface formed by the curved shoulder *f′* of the sleeve F the antifriction-balls J are confined. The balls extend around the driving-shaft, it will be understood, but are not in contact therewith, as they roll in contact only with the cone bearing-sleeve I and curved bearing *f′* of the sleeve F. The cone bearing-sleeve I fits loosely or without frictional contact in the bearing-sleeve F at its outer end. The end of the driving-shaft to which the driving-wheel is secured is screw-threaded, has a split clamp-nut K thereon inside the driving-wheel, and is provided with a groove *k*, extending longitudinally thereof. A cone bearing-sleeve L is adjustably mounted on the driving-shaft inside the nut K and projects into the outer end of the bearing-sleeve G. A screw *m* in the cone bearing-sleeve L and projecting into groove *k* in the driving-shaft serves to prevent the turning of this sleeve, while allowing it to be adjusted along the driving-shaft. By turning the clamp-nut the cone bearing-sleeve L may be moved inward, as desired, and it is held in its adjusted position or against outward movement by this nut. Antifriction-balls *n*, similar to the balls J, are confined out of contact with the driving-shaft, so as to bear upon the proper surface *l* of the cone bearing-sleeve L and against the curved surface *g′* of the bearing-sleeve G.

From the above description it will be seen

that by the provision of the bearing-sleeves F and G the frame bearing-opening is prolonged or extended at its opposite ends, that these sleeves constitute separable and renewable journals for the upright standard to rock about, that the wear of the bearing-opening portion of the frame which would take place were the standard mounted to rock about journals formed directly upon such portion, as heretofore, is obviated, and that wear by contact with the balls is upon the inexpensive and readily-renewable sleeves instead of upon the bearing-opening portion of the comparatively-expensive frame of the engine.

If preferred, the nut K may be omitted and the hub of the driving-wheel be screw-threaded to constitute a nut having the function of adjusting the adjustable cone bearing-sleeve. (See Fig. 3.)

To operate the hub of the driving-wheel as an adjusting-nut, the screw P is loosened, and after properly adjusting the adjustable cone bearing by turning the wheel this screw is tightened to lock the wheel to the shaft.

I claim as my invention—

1. The combination of the dental-engine frame provided with the bearing-opening, the bearing-sleeves detachably fixed in the opposite ends of the bearing-opening, constituting prolongations thereof and each having the internally-enlarged portion and the curved bearing-surface, the driving-shaft passing loosely through the bearing-sleeves, the cone bearing-sleeve fast on one end of the driving-shaft and entering the enlarged portion of the bearing-sleeve at one end of the bearing-opening, the cone bearing-sleeve entering the enlarged portion of the bearing-sleeve at the other end of the bearing-opening and adjustable along the driving-shaft, means for adjusting this cone bearing-sleeve, and the two sets of balls confined between the cone bearing-sleeves and the curved bearing-surfaces of the bearing-sleeves in the bearing-opening of the frame, substantially as set forth.

2. The combination of the dental-engine frame provided with the bearing-opening, the bearing-sleeves detachably fixed in the opposite ends of the bearing-opening, constituting prolongations thereof and each constructed to provide a bearing-surface for antifriction-balls and externally shouldered, and the rocking standard of the engine mounted by its forks to rock about said bearing-sleeves, substantially as set forth.

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

ARTHUR W. BROWNE.

Witnesses:
SEYMOUR CASE,
M. A. COLE.