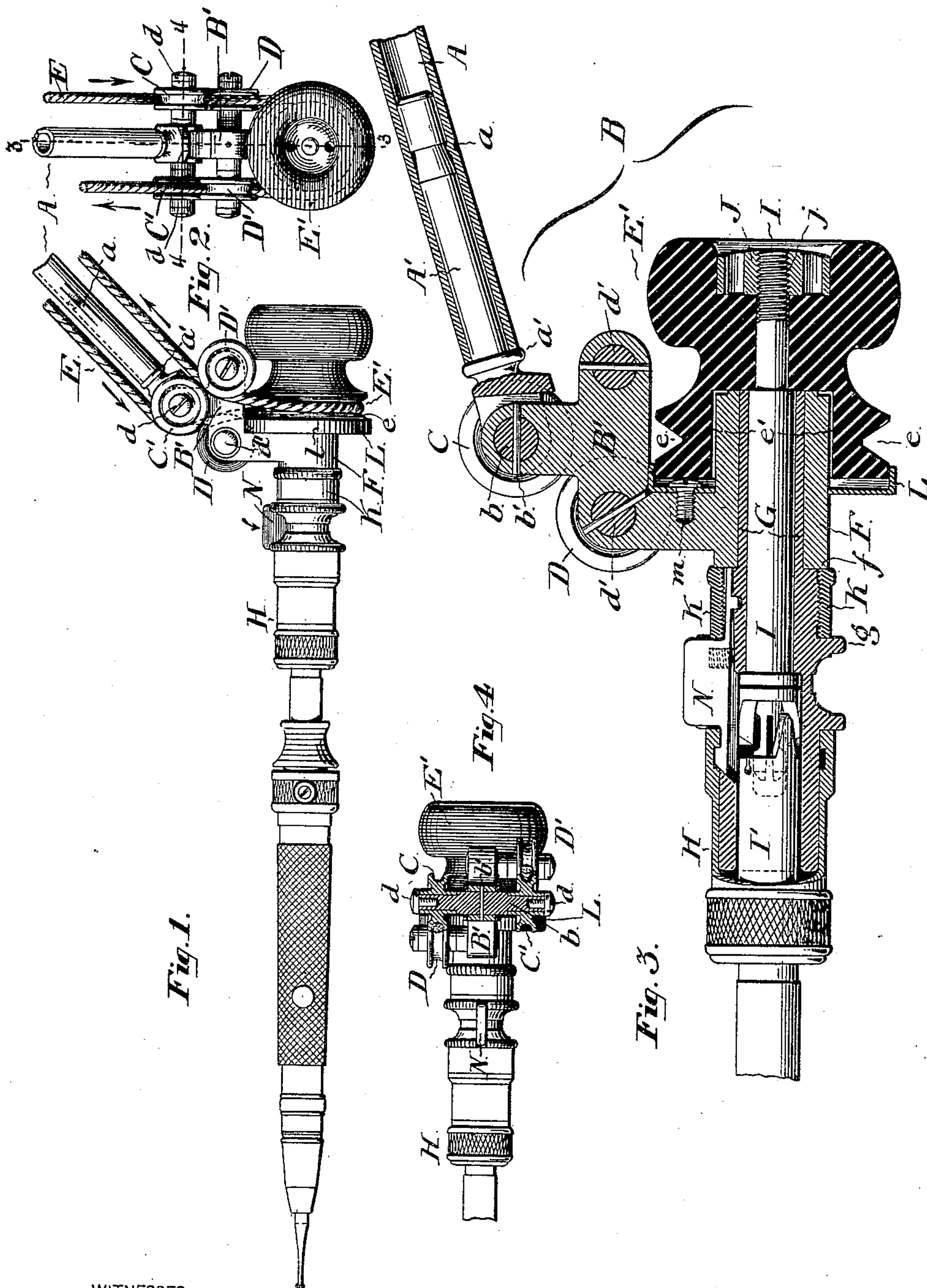


(No Model.)

A. W. BROWNE.
HAND PIECE PULLEY HEAD FOR DENTAL ENGINES.
No. 434,697. Patented Aug. 19, 1890.



WITNESSES:

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HAND-PIECE PULLEY-HEAD FOR DENTAL ENGINES.

SPECIFICATION forming part of Letters Patent No. 434,697, dated August 19, 1890.

Application filed March 6, 1890. Serial No. 342,858. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR W. BROWNE, of Prince's Bay, in the county of Richmond and State of New York, have invented a certain new and useful Improvement in Hand-Piece Pulley-Heads for Dental Engines, of which the following is a specification.

My invention relates to a certain improvement, as hereinafter claimed, applicable to dental engines of the class in which continuous driving-cords pass from the driving-wheels of the engines to pulleys having connection with the tool-carrying spindles of the hand-pieces; and my object is to provide improved means by which to lessen wear of the pulley-head.

In the accompanying drawings, Figure 1 is a view in elevation showing portions of the engine-arm and driving-cord, with the pulley-head and hand-piece and attachments thereof. Fig. 2 is a view in end elevation; Fig. 3, a view on an enlarged scale, partly in elevation and partly in section, on the line 3 of Fig. 2; and Fig. 4 a view, partly in plan and partly in section, on the line 4 of Fig. 2.

A portion only of the engine-arm is shown, that portion thereof which is not illustrated being constructed in a well-known way and jointed to the top of the engine-standard, as usual in this class of engines. Into the tubular section A of the engine-arm projects the short end section A' thereof, which has jointed connection with the frame B' of the pulley-head B. The short end section turns freely in its bearing in the tubular section of the engine-arm, and is prevented from endwise movement therein by the inward projection a of the tubular section entering an annular recess of the end section near the inner extremity thereof, and by the collar a' of the end section bearing against the extremity of the tubular section. The end section of the engine-arm is jointed to the frame of the pulley-head in the axial line of the pulleys C C' by being pivoted to the bolt b, which is made to constitute the journals for these pulleys. This bolt passes through a hole formed in the pulley-head frame, and is secured in place in any suitable way, as by the pin b'. The ad-

vantages of this construction, whereby the axis of vibration of the pulley-head about its jointed connection with the engine-arm is that about which the pulleys C C' rotate, will farther on be explained.

To make a proper connection between the parts in the relations above stated, the ends of the journal-bolt b are of less diameter than its middle portion, which is fitted in the pulley-head frame and constitutes at each side of this frame a pivotal connection for the engine-arm. Upon the reduced end portions of the bolt the pulleys C C' are mounted, the headed screws d d' serving to hold the pulleys against the shoulders formed by the enlarged portion of the bolt. The end section of the engine-arm is forked to embrace the pulley-head frame and is provided at opposite sides of this frame with bearings for engagement with the enlarged portion of the journal-bolt. Pulleys D and D' are mounted each upon its respective journal-bolt or stud d', secured in the pulley-head frame. The driving-cord E passes in one direction between the pair of pulleys C D and in the other direction between the pair of pulleys D' C', after having passed around the hand-piece spindle-actuating pulley E'. The cord-receiving groove e of the spindle-actuating pulley E' is in the plane of a line drawn between the pulleys D D' and passing laterally through the axis of rotation of the pulleys C C', so that the grooved portion of the actuating-pulley rotates in a plane the same as that of the axis of said pulleys C C' and at right angles to the planes of rotation of these pulleys, these relations being maintained at all times, so that the distance from the actuating-pulley to either of these pulleys C C' is always the same. Owing to the manner of jointing the pulley-head by its frame to the engine-arm so that this head rocks about the axis of the pulleys C C', it will be seen that the relative positions of the pulleys of the respective pairs C D and C' D' are maintained unaltered at all times, with the pulley D beneath and in front of the pulley C and the pulley D' beneath and in rear of the pulley C'. The result of this arrangement and the relation of the act-

uating-pulley to the pulleys C C' and D D' is that during movements of adjustment of the hand-piece about the journal-bolt or pivot *b* the driving-cord E is maintained under uniform tension always, for obviously as the cord becomes engaged to a less extent with one of the pulleys C C' it becomes engaged to a correspondingly-increased extent with the other of these pulleys, the cord winding on the one pulley as it unwinds from the other. The sleeve or hub-like bearing F of the pulley-head receives the turning coupling-sleeve G, with which the hand-piece casing H is detachably connected, so as to turn or swivel with this coupling-sleeve in the pulley-head. The actuating-pulley E' is detachably secured to the rear or inner end of a driving-spindle I, which at its outer or front end is adapted to be connected with the tool-carrying or hand-piece spindle I' in any suitable or well-known way.

The coupling-sleeve G, actuating-pulley, driving-spindle, and hub or bearing-sleeve of the pulley-head are secured in position in the following way: The actuating-pulley is provided with a rearward extension terminating in a knob or head provided with a central opening, into which is received the end of the driving-spindle in rear of the pulley-head bearing and coupling-sleeve. That portion of the driving-spindle which enters the head of the actuating-pulley is of reduced diameter and terminates in a screw *j*. The pulley-head is recessed to receive a nut J, which screws upon the threaded end of the driving-spindle. A shoulder or collar K abuts against a shoulder *g* of the coupling-sleeve, and another shoulder *f* upon the coupling-sleeve abuts against the front end of the bearing F of the pulley-head. The actuating-pulley is centrally recessed to provide a socket *e'*, into which projects the pulley-head bearing. This

socket is of greater diameter than the pulley-head bearing, so as to avoid contact therewith. By turning the nut J the parts may be properly adjusted and maintained in position. As the driving-spindle has its bearing in the coupling-sleeve interposed between it and the sleeve of the pulley-head, it will be obvious that the injurious wear of this sleeve, which would result were the spindle rotated in it as a bearing, is avoided, the only wear upon the pulley-head sleeve being that occasioned by the turning of the coupling-sleeve therein as the hand-piece is manipulated, which wear is so slight as practically to amount to nothing.

An annular guard L, secured to the pulley-head and surrounding its bearing-sleeve in advance of the actuating-pulley, serves to prevent contact of the hand of the operator with this pulley. The guard is shown as made cup-shaped, with its rearwardly-projecting peripheral flange *l* slightly overlapping the actuating-pulley. A screw *m* serves to secure the guard to the pulley-head.

A suitable connection between the casing H of the hand-piece and the coupling-sleeve G consists of the latch N, of well-known construction.

I claim as my invention—

The combination of the hand-piece, its coupling-sleeve, the pulley-head provided with the bearing-sleeve mounted on said coupling-sleeve, the driving-spindle having bearing in the coupling-sleeve, and the actuating-pulley of the driving-spindle, substantially as and for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

ARTHUR W. BROWNE.

Witnesses:

GEO. D. HECK,

ARTHUR L. PARSONS.