W. S. HOW.

DENTAL ENGINE.

No. 301,237. Patented July 1. 1884.

Fig. 1.

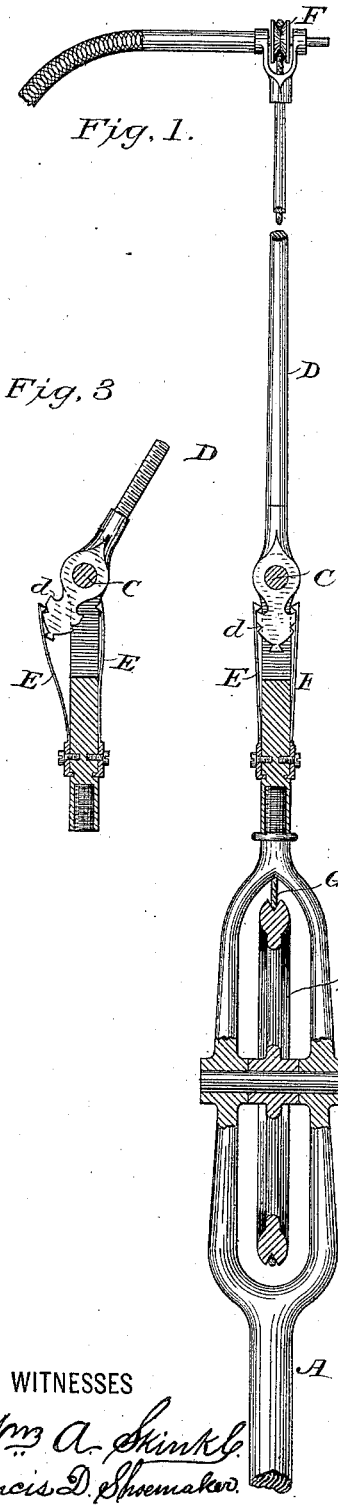
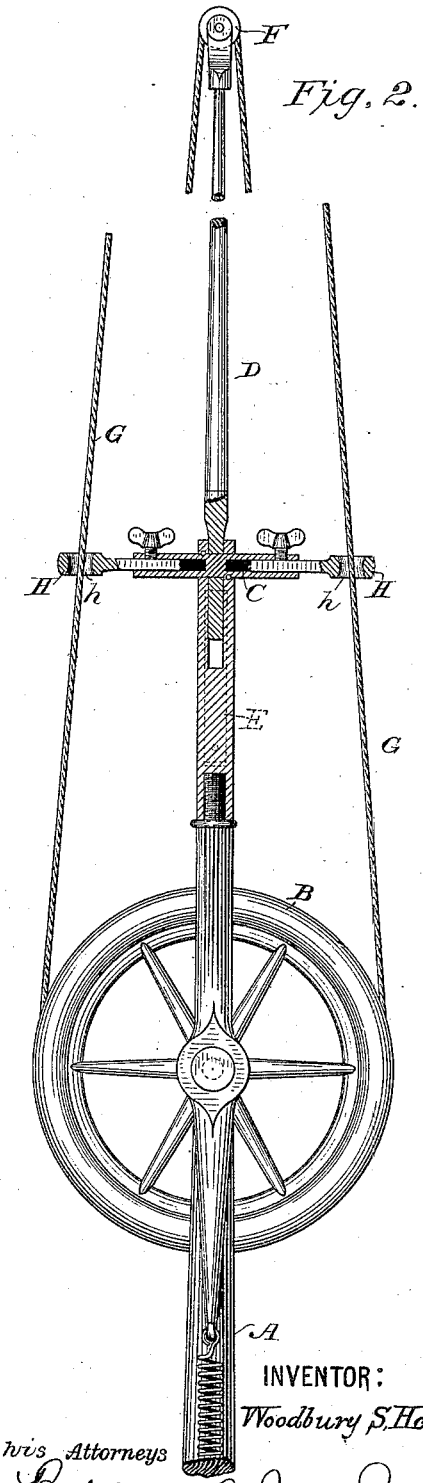


Fig. 3

Fig. 2.



WITNESSES

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DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 301,237, dated July 1, 1884.

Application filed July 18, 1878.

To all whom it may concern:

Be it known that I, WOODBURY S. HOW, formerly of Cincinnati, Ohio, but now residing in the city of Philadelphia, Pennsylvania, have invented certain new and useful Improvements in Dental Engines, of which the following is a specification.

My invention relates more particularly to dental engines of the class provided with an upright standard carrying at its upper end a power-driven shaft, by which motion is communicated to the operating-tool.

Heretofore the standards of dental engines have been either rigid, so as to constitute continuations of the pedestal or base of the engine, or such standards have been pivoted at their lower ends about the axis of the ordinary drive-pulley, so as to be capable of a rocking movement in the plane of the drive-wheel, and are acted upon by a spring or springs, which maintain the engine-standard in a normally upright or vertical position. The object of this rocking movement of the standard is to give a wider range of action to the engine and greater freedom of movement to the power-driven shaft by which the operating-tool is revolved. After much experience with the use of dental engines in the practice of dentistry, I have found it desirable not only to give the standard a rocking movement across the axis of, and in the plane of, the driving-pulley, but also to enable said standard, or a portion thereof, to be rocked or moved crosswise of the plane of motion of the pulley, or, in other words, at right angles, or substantially so, to the usual rocking movement of the standard. By this organization a superior engine is produced, because the driven pulley at the upper end of the standard, which imparts motion to the operating-tool through a driven shaft, may be brought in front of the patient seated in the operating-chair without bringing the engine-base inconveniently close to said chair, whereby a wide range of movement is given to the engine and great freedom imparted to the usual flexible shaft, which constitutes the power-conveyer between the driven pulley at the upper end of the standard and the operating-tool. This universal motion to be imparted to the engine-standard has heretofore been attained by hinging the standard by a double-jointed or universal connection at or near the axis of the driving-pulley; but such double-jointed connection is a spring-connection, whereby the standard, whether rocked in the line of the rotation of the driving-pulley or crosswise thereof, is returned as soon as the strain is removed to an upright or vertical position. Such a double-jointed standard is shown in C. P. Grout's Patent No. 125,809, of 1872. There are serious defects, however, in said Grout's device, in that there is no capability in the rocking or jointed standard of being moved out of the perpendicular and then locked, so as to prevent its return to a vertical position. This is a very important feature, and in this feature my invention broadly consists. So, also, Grout employs friction-gearing with his double rocking connection, which is an impracticable form for the purpose, all engines of this class in use being driven by a belt from the main driving-pulley. I am the first, as far as I am aware, ever to have provided a dental-engine base with an upright standard which can be moved out of the perpendicular to any angle desired and then locked, so as to prevent its return to an upright position when released from the power which causes the rocking or flexing movement of the standard.

My invention also consists in other improvements, which are particularly recited at the close of the specification.

In the accompanying drawings, which illustrate my improvements as embodied in the best way now known to me, Figure 1 is a view in elevation (looking at the edge of the driving-pulley) of so much of a dental engine as is necessary to illustrate my improvements, the pedestal being rigidly extended above the driving-pulley to receive a connection with the rocking standard. Fig. 2 is an elevation (looking in a direction at right angles to that of Fig. 1) of so much of an engine as is necessary to illustrate my improvements, the engine in this instance being provided with a standard hinged at or about the axis of the driving-pulley, so as to be rocked back and forth and retained in a normal position by a spring, and said standard being also jointed

above said driving-pulley, so as to be moved or rocked at right angles to the movement first described, or, in other words, across the plane of rotation of the driving-pulley. Fig. 3 is a view of the crosswise-rocking connection detached, and constituting an attachment for application to engines in common use.

The base or pedestal of the engine may be of the usual construction, with an upright portion, A, in or on which the driving-pulley B is mounted to turn and be driven, for instance, by a treadle movement, as usual. In the example shown in Fig. 1 the pedestal A is extended above the driving-pulley, and is fitted with a tubular horizontal axis, C, in a line with the plane of revolution of the driving-pulley. The standard D is fitted or hinged upon said axis C, so as to be rocked crosswise of said axis, or, in other words, crosswise of the plane of revolution of the driving-pulley, as clearly shown in Fig. 3. The normal position of the standard D will be vertical; but when it is desired to bring the upper end of the standard in front of the patient, said standard will be rocked upon its axis to the desired extent. When so rocked or moved out of the perpendicular, said standard may be locked by suitable spring-catches, E E, which take into locking-notches *d* in the lower end or extension of the standard D, as clearly shown in Figs. 1 and 3. Said springs constitute an automatic locking device.

The driven pulley F, with which the usual power-conveyer is connected at the upper end of the engine-arm, receives the driving-belt G, which passes from the driving-pulley B. As long as the standard is in an upright position a properly-fitted driving-belt would remain operative; but were not provision made it is obvious that upon rocking the standard out of the perpendicular the belt would become slack, and would be disengaged from the pulleys, and would not continue in an operative condition.

In order to enable the standard and pulley at its upper end to be rocked crosswise to the desired position, and the engine to remain operative, I have provided guides H H for the belt in a line with the axis or joint C upon which the standard is turned. This belt-guide consists, preferably, of adjustable arms having eyes *h h* at their outer ends which receive the belt. Said arms are fitted to slide back and forth in the tubular axis upon which the standard rocks, or is capable of being turned crosswise, and by means of a set-screw may be locked in the desired position, in order to insure the proper working of the belt. It is now obvious that, notwithstanding the crosswise rocking movement of the standard, the belt will remain taut and in an operative condition. In place of the plain eyes at the outer ends of the adjustable arms, band-pulleys may be employed, over which the belt may work.

In the engine shown in Fig. 2 the pedestal terminates at or about the driving-pulley, and the engine-standard is pivoted about the axis of said pulley, so as to be capable of rocking freely back and forth in the direction of the line of rotation of said pulley, the standard being acted upon by a spring, as usual in such cases, to maintain the standard in a normally upright position and to return it to such position when the rocking strain upon the standard has been removed.

Between the pivotal connection of the standard with the pedestal or base and the driven pulley at the upper end of said standard the standard is provided with the crosswise rocking connection, before described, and locking devices, whereby the upper end of the standard and driven connections thereat may be brought over in front of the patient while seated in the operating-chair and the standard locked in this bent or adjusted position. As shown in Fig. 2, therefore, it will be understood that the standard has what is tantamount to a universal-joint movement with a capability of being rocked out of the perpendicular and locked or fastened in such position. In Fig. 3 I have shown the crosswise rocking connection as detached and in the shape of an attachment to be applied to dental engines now in use. The lower end of the attachment is socketed and threaded to be screwed upon a portion of the standard of an ordinary engine, while the upper end is likewise threaded to receive the upper portion of said ordinary standard, whereby it will be understood that the rocking joint constitutes a part of the standard, which will then be capable of the movements and adjustments before described.

Having thus described my improvements, I claim herein—

1. The dental-engine base or pedestal having a jointed or tilting standard movable out of the perpendicular, in combination with locking mechanism, whereby the standard, when moved or adjusted out of the perpendicular, may be locked or held in such adjusted position, substantially as described.

2. The dental-engine base or pedestal having a jointed or tilting standard movable out of the perpendicular, in combination with an automatic locking device, whereby the standard may be moved or adjusted out of the perpendicular and locked in such adjusted position, substantially as described.

3. A dental-engine standard or upright jointed to the base or pedestal above the driving-pulley of the engine, in combination with a driving-belt and guides therefor, whereby the upper end of the standard may be moved out of the perpendicular without destroying the proper operative condition of the driving-belt.

4. A dental-engine standard or upright jointed to the base or pedestal above the driving-pulley of the engine, in combination with a driving-belt and adjustable guides therefor, substantially as described.

5. An engine standard or upright jointed at

its lower end to the base and provided above said joint with an additional joint, in combination with locking mechanism for said last-mentioned joint, whereby the upper end of the standard may be moved out of the perpendicular and locked in its adjusted position.

6. The attachment for dental-engine uprights or standards, consisting of a jointed connection, the upper and lower ends of which are provided with means for attachment to the members of said standard, substantially as described.

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Witnesses:
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