

(No Model.)

F. A. DAMON.
DENTAL ENGINE.

No. 481,164.

Patented Aug. 23, 1892.

Fig. 1

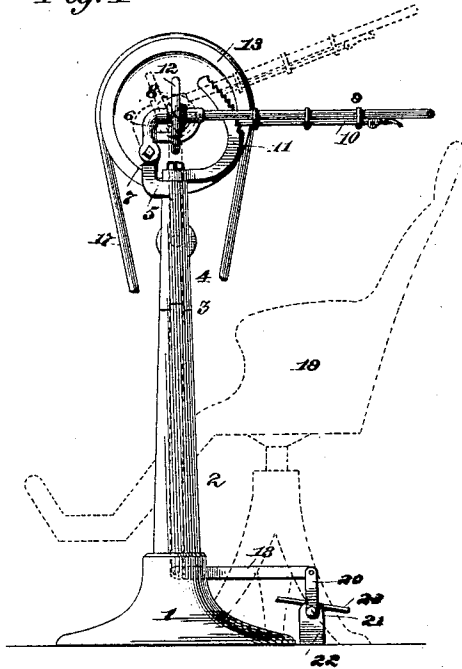


Fig. 2

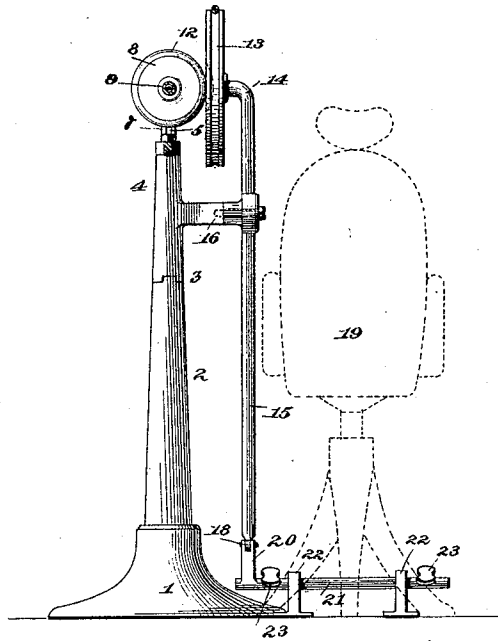
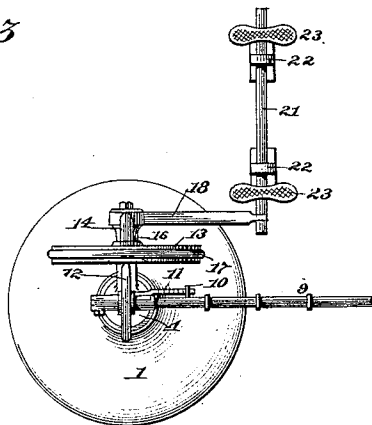


Fig. 3



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANK ARTHUR DAMON, OF FITCHBURG, MASSACHUSETTS.

DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 481,164, dated August 23, 1892.

Application filed July 16, 1891. Serial No. 399,703. (No model.)

To all whom it may concern:

Be it known that I, FRANK ARTHUR DAMON, a citizen of the United States, residing at Fitchburg, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Dental Engines; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention is in the nature of a dental engine, and has for its object to furnish an improved machine of this class which shall be easily adjustable to greater or less speed and readily reversed or stopped and shall be simple in construction and not liable to get out of order.

With these objects in view my invention consists in the improved construction, arrangement, and combination of parts, as hereinafter fully described, and afterward specifically pointed out in the subjoined claims.

In the accompanying drawings, illustrating my invention, in the several figures of which like parts are similarly designated, Figure 1 is a view in side elevation of a dental engine constructed in accordance with my invention, the outline of the operating-chair being shown in dotted lines. Fig. 2 is a view of the same in rear elevation, the chair being also shown in outline in dotted lines. Fig. 3 is a top plan view of the engine, the chair being omitted.

1 is the base which supports the main column 2 of the engine, said column being in two parts joined together at 3 by a swivel-joint to permit the upper part 4, which carries the operative parts, to be turned upon the lower or main portion 2.

Rigidly secured to or preferably cast integral with the upper part 4 of the column is an arm or bracket 5, to which another or second arm 6 is pivoted at 7. This pivoted arm is the bearing in which a friction-wheel 8 is journaled, said friction-wheel being applied in any suitable manner to the usual power-transmitting shaft arranged in the shaft-tube 9. By reason of the mounting of the arm or bearing 6 upon the pivot 7 there is a vertical

movement of the shaft and shaft-tube permissible, and a rotary movement in a horizontal plane being permitted by the swivel-joint 3 in the column the friction-wheel and its shaft are given a universal adjustment. The vertical adjustment of these parts is controlled by means of a pawl 10 on shaft-tube 9, which engages a curved rack 11, bolted or otherwise rigidly secured to the upper part of the column.

The friction-wheel 8 is provided with a rubber tire 12, which is in contact with the side of a larger friction-wheel 13, and this wheel 13 is mounted upon the horizontally-projecting portion 14 of an arm 15, the main body of which arm extends downward and is pivoted upon a horizontal arm or pin 16, projecting horizontally from the upper part 4 of the column, the shaft of wheel 13 being at right angles to that of the wheel 8. The larger or driving wheel 13 is driven from a suitable motor by means of a band 17, said motor being located suitably upon the floor, and while such motor may be of any desirable class I prefer the ordinary water-motor, so well known for analogous purposes.

When it is desired that the motion of the driven wheel 8 be retarded, the driving wheel 8 or pulley 13 is adjusted so that the wheel 8 will have its bearing nearer to the center of the wheel 13, and to accelerate the motion of the wheel 8 its relation with wheel 13 is so changed (by moving wheel 13) that it shall bear upon wheel 13 nearer to its circumference. To stop the small wheel and of course the tool which it carries, the wheel 13 is moved so that wheel 8 will bear upon it at its center, and, if desired, a small portion of wheel 13 may be removed at its center, as indicated by the dotted lines *a* in Figs. 1 and 2, so that there will be no bearing at this point. To reverse the motion of wheel 8, it is only necessary to so move the wheel 13 that the point of contact of wheel 8 with it shall be changed from one side of the center of wheel 13 to the other. To effect these adjustments, I have provided the following mechanisms, under full control of the operator and actuated by a treadle at one side and to the rear of the chair: At the lower end of arm 15 is connected a horizontal link or rod 18, which passes alongside of and to a point in line with

the rear of the chair, the chair being shown in outline by dotted lines at 19. At this point the link or rod 18 is pivotally connected with the upper end of a crank-arm 20, projecting upward from a shaft 21, journaled in suitable bearings 22 on the floor, or it may be attached to the legs of the chair. This shaft passes under or to the rear of the rear of the chair to its opposite side (the right-hand side) and is there provided with a treadle 23, by means of which it may be turned. The operator, standing on the right-hand side of the chair, with his foot upon the treadle 23, thus has full control of the engine, which is located on the left-hand side of the chair and in front thereof.

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

1. A dental engine provided with a tool-shaft, a friction-driven wheel thereon, a pivoted arm, and a driving friction-wheel arranged on one end of said arm and by it adjustable with relation to the driven wheel to bring the point of contact between the two wheels to opposite sides of the center of the driving-wheel to change the direction of motion and capable of having its center brought opposite the driven wheel to stop the tool-shaft, the parts being combined and operating as set forth.

2. The combination, in a dental engine, of the tool-shaft, a friction-wheel mounted thereon, a second friction-wheel having a de-

pressed center, a pivoted arm carrying the second friction-wheel, the frictional contact being between the circumference of the first and the side surface of the second wheel, and means to vibrate said arm, as set forth.

3. The combination, in a dental engine, of a tool-shaft, a friction-wheel thereon, a second friction-wheel, with whose side surface the circumference of the first wheel engages, a pivoted arm upon which the second wheel is mounted, a treadle, and connections between the pivoted arm and the treadle, whereby the position of the second wheel with relation to the first is controlled from the treadle, as and for the purpose set forth.

4. In combination, the column consisting of the upper and lower parts connected by a swivel-joint, the friction-wheel carrying the tool-shaft and pivotally mounted on the upper part of the column, the side friction-wheel driven from a suitable motor, the lever upon which said wheel is mounted, also pivoted to the upper part of the column, the horizontal bar connected to the pivoted arm at one end, and the treadle-shaft having crank-arm, to which said horizontal bar is connected at its opposite end, as and for the purpose set forth.

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

FRANK ARTHUR DAMON.

Witnesses:

NELLIE A. STONE,
ALICE L. GILSON.