No. 610,214. Patented Sept. 6, 1898.

J. D. WILKENS.

DENTAL ENGINE.

(Application filed Oct. 11, 1895.)

(No Model.) 2 Sheets—Sheet 1.

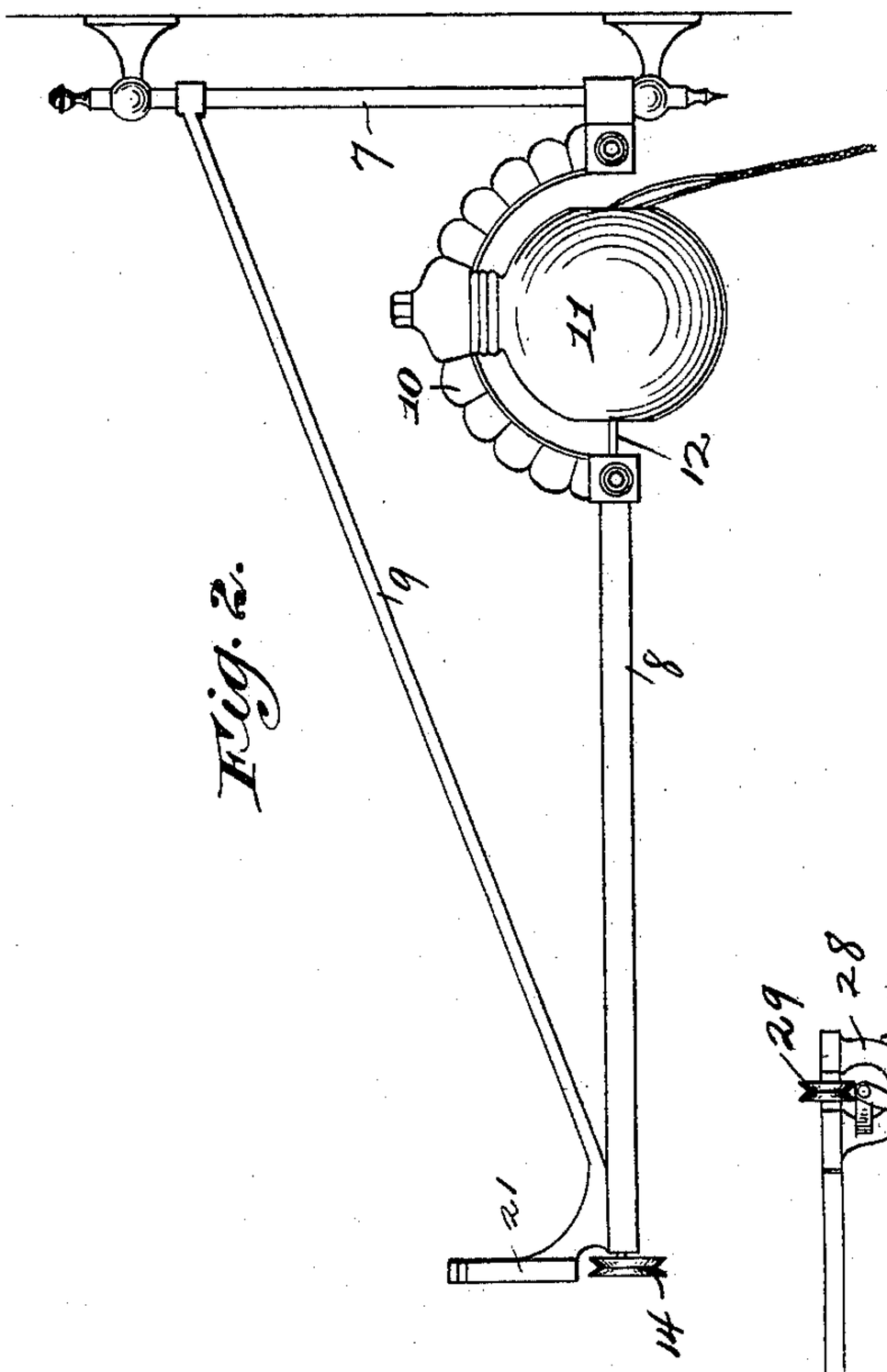

Fig. 2.

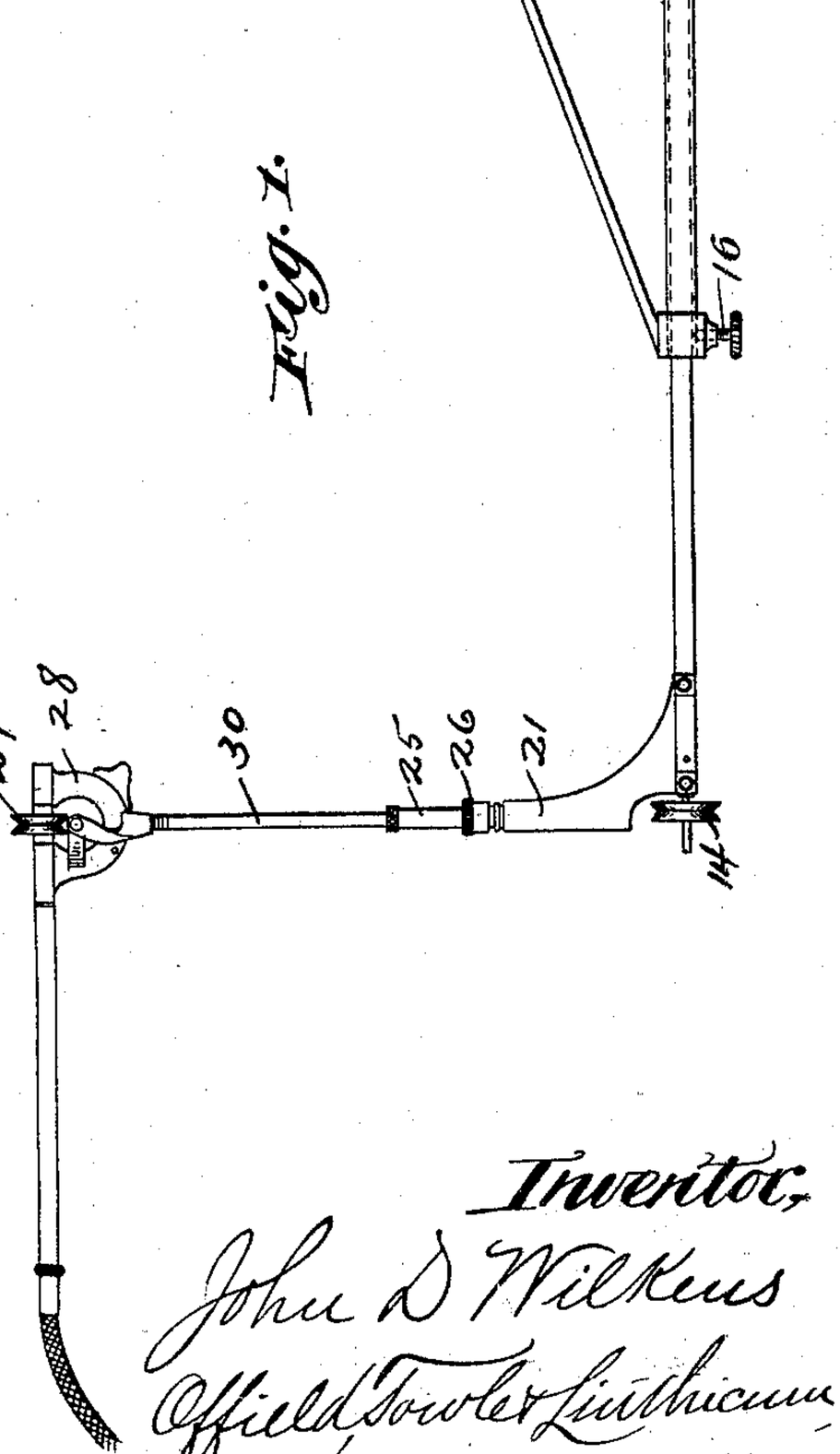

Fig. 1.

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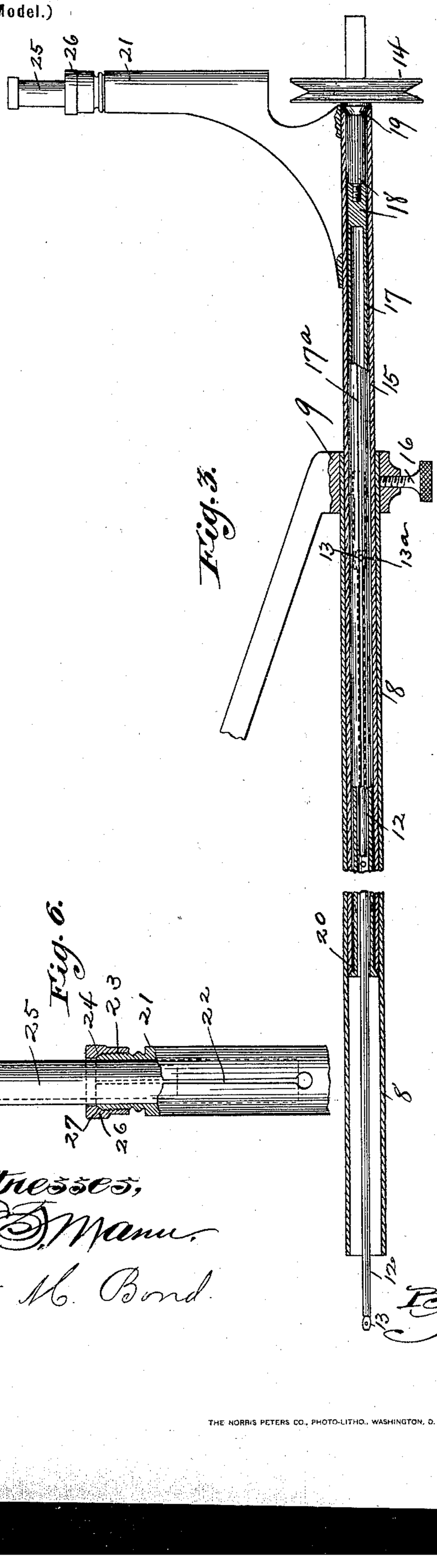

Fig. 3.

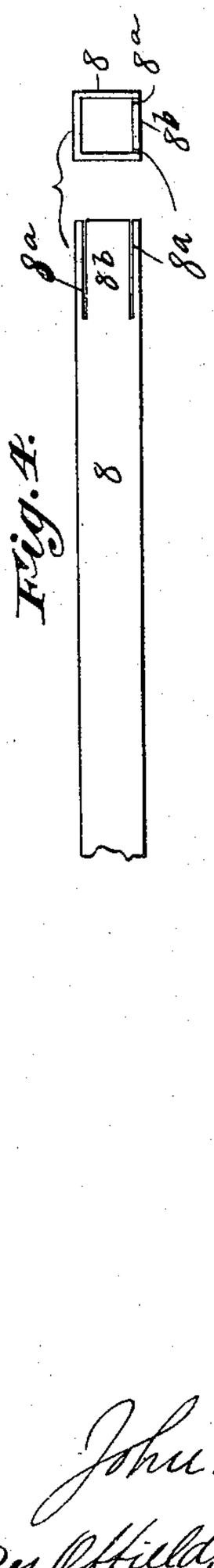

Fig. 4.

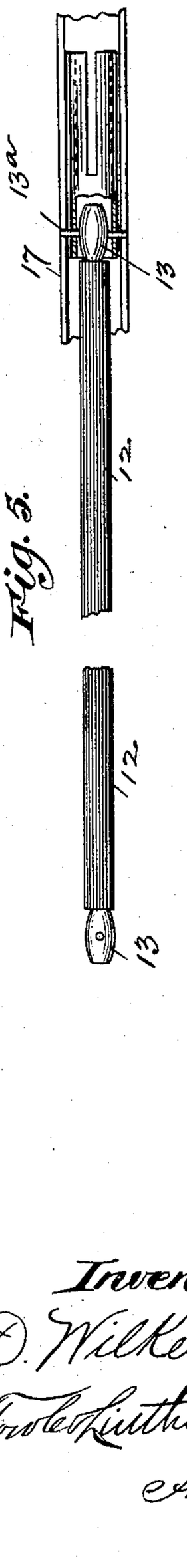

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

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DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 610,214, dated September 6, 1898.

Application filed October 11, 1895. Serial No. 565,329. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. WILKENS, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Dental Engines, of which the following is a full, clear, and exact specification.

This invention relates to certain improvements in dental engines, and has for its object, first, to provide a dental engine with an electric motor so located and arranged as to dispense with pulleys and belting heretofore employed in connection with such motors; second, to provide an extensible driving-shaft which is directly connected at one end to the motor and carries at its opposite end a driving-pulley from which power is transmitted to the flexible shaft which drives the tool.

My invention also relates to certain improvements in the means for securing the telescoping parts in their adjusted positions.

In the accompanying drawings, Figure 1 shows my improvement applied in a wall-bracket having an extension-shaft. Fig. 2 is a view showing the bracket without the extension feature. Fig. 3 is a detail, partly broken away and partly in section, showing the telescopic bearings and extensible shafts and the means for securing the parts in the adjusted position. Figs. 4 and 5 are detail views, the former showing an end and bottom plan view of the outer tube and the latter showing the sectional driving-shaft and the manner of connecting its sections. Fig. 6 is a detail view of a telescopic standard carried by the outer end of this bracket-arm.

It is comparatively easy to provide a dental engine having a base resting upon the floor with an electric motor, but difficult to apply an electric motor to an engine of the swinging-bracket type. I have accomplished this in the manner shown in the accompanying drawings, in which 7 represents the pivoted post of the bracket, 8 the swinging arm, and 9 the diagonal brace. Near the base of the swinging arm 8 there is provided an arched frame 10, carrying the motor-frame 11. I have not shown the form of motor; but an electric motor of the well-known Lundell type may be mounted in such a casing as is here shown and adapted to drive the shaft 12. Said shaft is shown in Figs. 3 and 5 and is preferably provided with rounded heads 13, so as to form with coadapted parts a ball-and-socket joint which will permit the shaft to run without friction in case any of the parts are not in exact alinement. This shaft is carried in suitable bearings which may be provided in the swinging arm 8 in the construction shown in Fig. 2 and carry at its outer end the pulley-wheel 14. The usual flexible shaft may be connected directly to the driving-shaft 12.

In the construction shown in Figs. 1 and 3 the shaft 12 is sectional and is adapted to be extended, so as to give a greater range of movement.

The base-section 8 of the swinging arm is a square tube, as shown in Fig. 4, and said tube may be provided near its outer end with longitudinal slots 8^a in its bottom wall, thus affording a spring-tongue 8^b. Within said base-section 8 a sliding tube 15, of similar cross-section, is adjustably confined by means of the set-screws 16, working in the threaded aperture in the end of the brace 9. Said screw impinges upon the spring-tongue 8^b, and thereby clamps the parts 8 and 15 in adjusted position. The shaft 12 is adjustably connected at its outer end to a hollow shaft 17, having a solid portion 18, provided with a cone-bearing 19 in the end of the tube 15 and carries the pulley 14. The hollow shaft 17 is provided with a longitudinal slot 17^a, and the head 13 on the outer end of the shaft 12 carries a pin 13^a, which enters said slot and furnishes the means for driving the hollow shaft from the solid shaft and also adapts said parts to be adjusted upon each other. The hollow shaft 17 in the construction shown in Fig. 3 has an inner cone-bearing 20, the cone being adapted to the bevel end of the tube 15, and therefore the hollow shaft and tube are moved out and in simultaneously and prevented from movement with reference to each other. The tube 15 carries at its outer end a standard, which is sectional in construction.

In Fig. 6, 21 shows the base-section, which is tubular and provided with longitudinal slots 22. The upper end of this base-section

is externally threaded, as at 23, and beyond the threads terminates in a bevel or conical seat 24. Within this base-section the tubular member 25 is clamped by means of the clamping-ring 26, having threads adapted to the threads 23 and a beveled bearing 27, adapted to the bevel-seat 24. When the ring is turned down, so as to force these bevel-surfaces together, the upper ends of the base-section 21 are clamped tightly upon the section 25, and the latter may be adjusted up and down to take up any slack in the driving-cord or to adapt them for use with different engine-heads. The engine-head which I have shown is marked 28 and is provided with a pulley 29, from which a belt would be carried over the driving-pulley 14, and the standard 30 of the head is socketed within the adjustable standard-section 25.

It will be seen that in my construction I connect the motor directly with the driving-shaft, thus dispensing with a counter-shaft and a belt and pulleys, which would be necessary if the motor were mounted separately from the bracket. By mounting the engine directly upon the swinging bracket the difficulty of alinement is overcome, and by a single belt the flexible shaft of the engine may be driven and the entire mechanism brought within easy control of the operator.

I have shown both the extensible and non-extensible brackets. Of course the former is preferred, and when employed the other features of construction which are herein described will be found useful in making the several adjustments of which the engine is capable, although it will be understood that some of the features of my invention may be used in an engine wherein others of said features are omitted.

I am aware that dental engines have been driven by electric motors and that in some instances it has been proposed to suspend the motor from the outer end of the swinging arm. I have not found such proposed construction nearly so satisfactory as the arrangement herein shown and described.

I claim—

1. A dental engine of the class described, comprising in combination a swinging bracket having an arched frame to which the base of the arm is connected, an electric-motor frame suspended from said arched frame and adapted to hold the motor with its shaft in alinement with said arm and a driving-shaft rotatably mounted in said arm and adapted for connection with the motor-shaft, substantially as described.

2. A dental engine of the class described, comprising in combination a swinging bracket having an electric motor supported by the base of the arm thereof, a driving-shaft mounted in said arm and connected with the motor and said arm having an extensible section carrying the standard and said driving-shaft having an extensible section carrying a driving-pulley, substantially as described.

3. In a dental engine of the class described a bracket having a swinging arm composed of a polygonal tube having its outer end longitudinally slotted to provide a free spring-tongue in one wall of said tube, an extensible section sliding within said arm and a set-screw having a bearing on said spring-tongue whereby to clamp said part in position, substantially as described.

4. A sectional driving-shaft for dental engines, comprising in combination two sections, one of which is hollow and adapted to receive the other and the hollow member having a longitudinal slot and the other member a rounded head and a pin carried by the head and adapted to said slot whereby driving engagement between the two may be maintained while they are adjusted lengthwise upon each other, substantially as described.

5. The combination with a sectional driving-shaft consisting of a tubular member, a solid member telescoped therewith and an extensible arm composed of two tubes telescoped together and the tubular member of the driving-shaft having a bearing upon the inner end of the extensible member of the arm, substantially as described.

6. In an engine of the class described, a standard composed of a base-section having its wall longitudinally slotted and its upper end threaded and terminating in a bevel-seat, an extensible section telescopically mounted within said base-section and a clamping-ring having a tapered bearing, substantially as and for the purpose described.

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