E. R. PETTIT.

DENTAL ENGINE.

No. 294,667. Patented Mar. 4, 1884.

Fig. 1

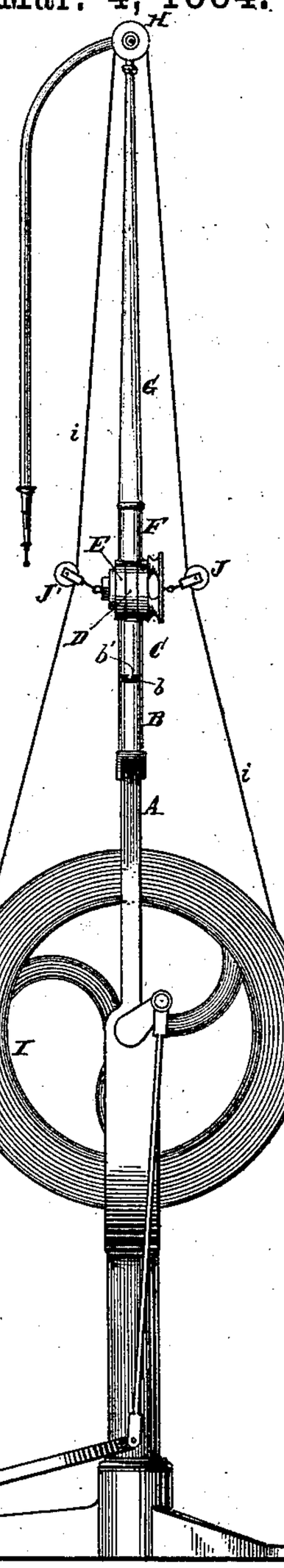


Fig. 2

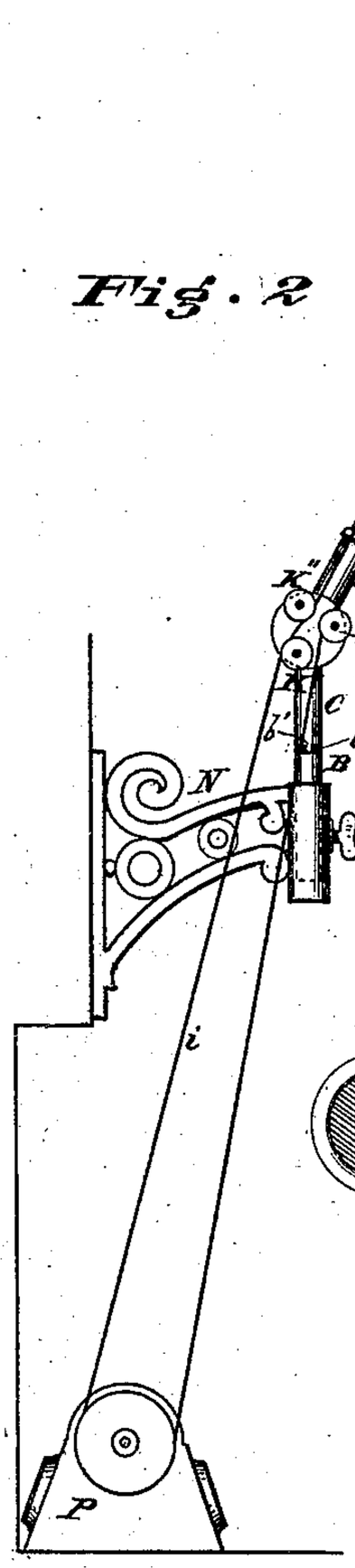
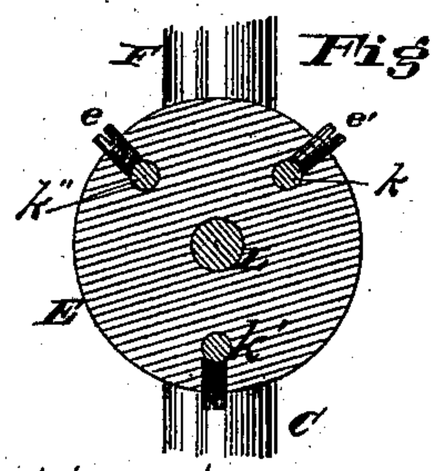


Fig. 3

Fig. 4



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UNITED STATES PATENT OFFICE.

ELIHU R. PETTIT, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF PENNSYLVANIA.

DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 294,667, dated March 4, 1884.

Application filed October 30, 1878.

To all whom it may concern:

Be it known that I, ELIHU R. PETTIT, of the city and county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Dental Engines, of which the following is a specification.

My invention relates to that class of dental-engines which are usually driven by foot-power through the agency of a treadle, or by proper connections with any suitable motor, and which are provided with hinged or jointed uprights or standards, which may be moved or rocked out of the perpendicular to increase the range of action of the engine.

The object of my improvement is to improve dental engines by imparting to the tool driven by them a wide range of movement, so as to facilitate and render more expeditious the operations of the dentists.

The subject-matter claimed herein is particularly pointed out at the close of the specification.

I wish it understood that some of my improvements may be used without the others.

In the accompanying drawings, which show my improvements as embodied in the best ways now known to me, Figure 1 is a side elevation of an ordinary foot-power dental engine with my improvements embodied therein; Fig. 2, a similar elevation of my improvements applied to an engine adapted to be driven by a suitable motor. Fig. 3 is a sectional view of the hinge or joint of the upright or standard, by which it is rendered capable of having its upper end moved or rocked out of the perpendicular; and Fig. 4 is a section through one of the jaws of the particular friction-hinge shown, which forms part of the movable portion of the standard, and representing more particularly the method of securing the idler or guide pulleys to the friction-hinge.

In Fig. 1, A represents the pedestal or base of the engine. A tubular piece, B, is attached to the upper end of the pedestal, and constitutes virtually a part thereof. A turning-connection, C, is fitted upon the tubular portion B—in this instance by means of a pivot-rod, *c*, which extends from the turning-connection C into the tubular portion B, so as to form a pivot upon which the connection C may be turned horizontally relatively to the standard A. Were there no provision to the contrary, the connection C would be free to turn entirely around upon the pedestal A or its tubular portion B; but I prefer to limit the turning or horizontal movement of the connection C, and this I accomplish by means of a depending lip or lug, *b'*, on the connection C, fitting a recess, *b*, in the upper end of the tubular portion B of the standard A, said recess *b* being of sufficient extent to permit the connection C to be turned partially around, the movement being limited by the depending lug *b'* coming in contact with the side walls of the recess *b* of the portion B.

The upright or standard G of the engine is jointed or hinged to the upper end of the turning-connection C, so as to be capable of being moved or rocked out of the perpendicular, and the joint or hinge is preferably a friction-hinge, formed by flattening the upper end of the connection C into a lug, D, fitted between jaws E E at the lower end of the standard G, or a connection, F, of said standard. A clamp-screw, L, is passed through the center of the jaws E E and lug D, and is provided with a clamp-nut, M, upon the end opposite the head of said clamp-screw. By screwing up the clamp-nut M it will be obvious that any degree of friction desired can be put upon the jaws E and lug D, and thereby cause the hinged or jointed standard to remain fixed at any given position. The normal position of the standard is a perpendicular one; but in the use of the engine it will be obvious the standard may be moved or rocked out of the vertical or perpendicular position, and be so held by means of the friction-joint. At one side of the friction-joint a plate, R, is secured, preferably by three rivets or pins, $k\,k'\,k^2$, which project from the side of the plate R and form axes for three idler or guide pulleys, K K' K², which are used when the engine is driven by a suitable motor other, for instance, than a foot-treadle. Said pins $k\,k'\,k^2$ fit corresponding holes in one side of the jaw E, and are conveniently secured therein by means of set-

screws *e e'*, as shown in Fig. 4, whereby the plate R and idler or guide pulleys are retained in their proper positions.

When the foot-treadle form of engine is employed, I preferably connect idler or guide pulleys J J', one to the plate R and the other to the end of the clamp-screw L, as clearly shown in the drawings. (See Figs. 1 and 3.)

The upper end of the upright or standard G carries the driven pulley H of the engine, as usual, to the axis of which the usual flexible power-conveyer is connected so as to be revolved and impart motion to the operating-tool when the driven pulley H is driven by the driving belt or cord *i*, which passes around the main driving-pulley I through the guides J' J and around and over said driven pulley. The power-conveyer is preferably of the usual construction, and is enveloped by the usual flexible sleeve, to which the hand-piece of the engine is connected.

From what has been said, it will be seen that the upper end of the standard or upright may be rocked or moved out of the perpendicular, so as to carry the driven pulley at its upper end, with the parts connected therewith, in front of the patient while seated in the operating-chair, or to any other desired position, in order to extend the range of action and impart greater freedom of movement to the upper works of the engine, while at the same time the said standard may turned or moved horizontally by means of the turning-connection C without impairing or interfering with the operation of the engine.

Owing to the belt-guides at or about the hinge or joint of the standard G, it will be obvious that any deflection or movement of the standard out of the perpendicular does not affect the proper operation of the driving-belt, and, further, that the said standard, when so moved or rocked out of the perpendicular, is maintained in its adjusted position by means of its friction-hinge.

When the engine is organized to be driven by a suitable motor, the arrangement is preferably that shown in Fig. 2. All the parts of the engine, from the portion B upward, are the same as before; but the portion B, instead of being fixed upon the standard A, is secured to a bracket-arm, N, which may be attached to the wall, to a dental cabinet, chair, or other fixture, the part B being inserted in a socket in said bracket-arm and being locked therein, while free to turn when released, for instance, by a clamp-screw, O. In this organization the rocking standard and turning-connection are preserved, while, if a further range of horizontal adjustment is desired than is afforded by the turning-connection C, the portion B may be adjusted in its socket in the bracket-arm and then locked by the clamp or securing device O. In this example the driving belt or cord *i* passes around the driving wheel or pulley of the motor P, through or around the idler or guide pulleys K K' K², and thence around the driven pulley at the upper end of the standard. Here, too, as in the instance first described, the upright or standard may be free to be moved out of the perpendicular without interfering with the proper operation of the driving-belt, and this notwithstanding the fact that the hinge-joint upon which the standard is moved is between the driving and driven pulleys of the engine.

Before stating what I claim, I desire to say that I do not broadly claim a hinged or jointed standard capable of being rocked or moved out of the perpendicular and maintained in its adjusted position, as I have found such construction, together with the guide-pulleys to preserve the proper operation of the driving-belt, not to be of my first invention.

I do claim herein, however—

1. The dental-engine upright or standard, hinged or jointed so as to be capable of being rocked or moved out of the perpendicular, in combination with a turning-connection below said joint or hinge, by which the standard may be turned or moved horizontally, substantially as described.

2. The dental-engine upright or standard, hinged or jointed so as to be capable of being rocked or moved out of the perpendicular, in combination with a turning-connection below said joint or hinge, by which the standard may be turned or moved horizontally, and a fastening device, O, to lock the standard when adjusted upon its turning-connection at the point desired, substantially as described.

3. The combination of the dental-engine upright or standard with the driving-pulley, the driven pulley at the upper end of said standard, the driving-belt, the hinge or joint in said standard, between the driving and driven pulleys, which permits the upper end of the standard to be moved out of the perpendicular, a turning-connection below the hinge or joint of the standard, and belt-guides at or about the hinge or joint of said standard, substantially as described, whereby the standard may be both moved out of the perpendicular and turned horizontally for proper adjustment without interfering with the operation of the engine.

In testimony whereof I have hereunto signed my name this 26th day of October, A. D. 1878.

ELIHU R. PETTIT.

In presence of—
W. C. STRAWBRIDGE,
J. BONSALL TAYLOR.