J. F. HAMMOND.

DENTAL BRACKET ENGINE.

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950,768.

Patented Mar. 1, 1910.

Fig. 1.

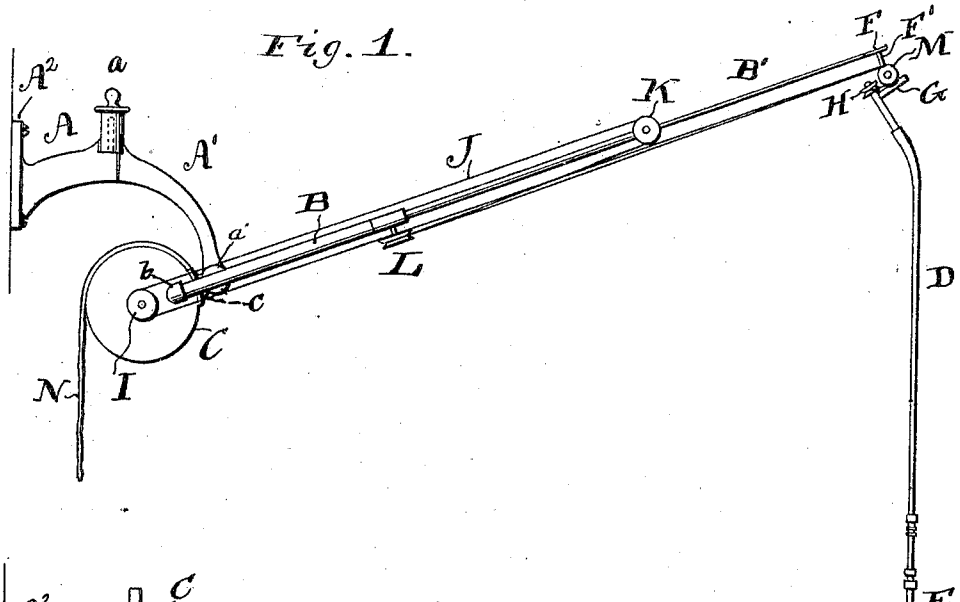

Fig. 2.

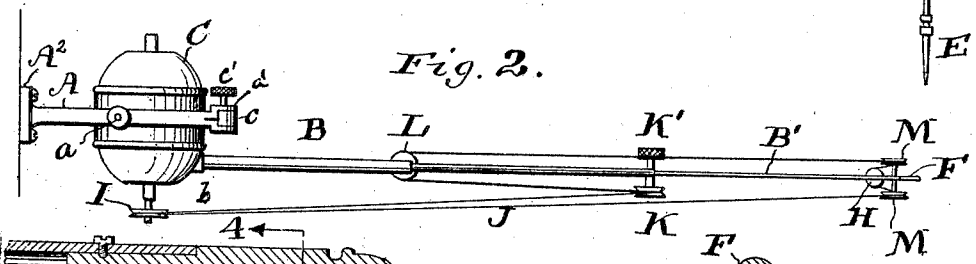

Fig. 3.

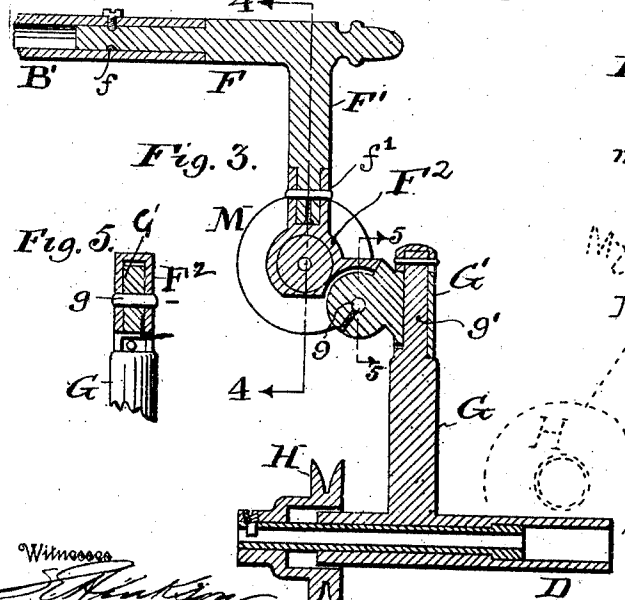

Fig. 4.

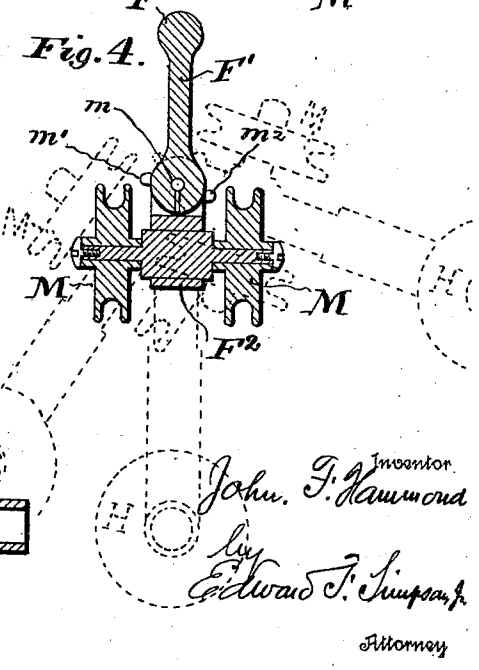

Fig. 5.

Witnesses

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DENTAL BRACKET-ENGINE.

950,768. Specification of Letters Patent. Patented Mar. 1, 1910.

Application filed April 29, 1908. Serial No. 430,005.

To all whom it may concern:

Be it known that I, JOHN F. HAMMOND, a citizen of the United States, residing in Prince Bay, in the county of Richmond and State of New York, have invented a certain new and useful Improvement in Dental Bracket-Engines; and I do hereby 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.

My invention relates to dental bracket engines and my object is to provide a simple yet strong engine of this class having ample range and freedom of movement and in which there will be no interference between the driving belt or cord used thereon.

My improvement consists in certain features of construction indicated in the accompanying drawing, described in the following specification and pointed out in the claims at the conclusion thereof.

In said drawings Figure 1 is a view in side elevation of my improved bracket engine. Fig. 2 is a top or plan view thereof. Fig. 3 is a central longitudinal section view on a larger scale than the preceding views of the head of said engine. Fig. 4 is a view of said head on the line 4—4 of Fig. 3, looking inwardly. Fig. 5 is a section on the line 5—5 of Fig. 3, looking outwardly, this view being at a right angle to said Fig. 3.

My improved engine, generally speaking, comprises a supporting arm consisting of two sections A and A^1; an extensible bracket arm also consisting of two sections B and B^1; a motor C; an engine head F, F^2 and G; a flexible shaft D, and handpiece E.

The first part of my invention relates to the supporting arm A, A^1 and the manner of connecting the motor C and bracket arm B, B^1 thereto. The inner section A of said arm projects rigidly from a wall plate A^2 which serves as a means for securing said arm to a wall. To this rigid inner section A of the arm the outer section A^1 is connected by a vertical pivot *a* which permits of said outer section being swung horizontally. Formed on the motor C is an ear or lug *c* which is placed between the forked extremity a^1 of the outer section A of the supporting arm, a screw C^1 being used to hold and clamp the parts in position. In this way the motor C has vertical rocking connection with the supporting arm by way of a frictional clamp pivot. The bracket arm composed of the extensible or telescopic sections B and B^1 is rigidly connected directly with the motor at *b* to one side of the pivotal connection *c* between said motor and the supporting arm, and extends in a line which intersects the axis of the motor and the axis of the pivot *c*. The outer section A^1 of the supporting arm is curved outwardly and downwardly, whereby the pivotal connection *c* between said arm and the motor is considerably below the inner end of the inner section A of the supporting arm and also below and in advance of the pivotal connection *a* between the two sections of said arm, and whereby also the motor has ample room to move upwardly when the bracket arm is swung downwardly, movement of said arm in this direction only being limited by the motor coming in contact with the supporting arm. By this construction the weight of the motor counter-balances, or nearly counter-balances, the weight of the bracket arm and the parts carried thereby; the bracket arm may be moved into a substantially vertical position where it lies up against the wall out of the way when not in use; it may be moved into any other vertical position to best suit the needs of the operator; and said arm may also be moved horizontally to any desired extent. In short, this exceedingly simple and strong construction provides free and ample adjustment of the bracket arm, which will temporarily remain in any position to which it may be moved.

The second part of my invention relates to the engine head which will now be described.

Between the outer extremity of the bracket arm and the engine arm or flexible shaft D is an engine head which is clearly shown in Figs. 3, 4 and 5. This head consists of an inner member F, an intermediate member F^2 and an outer member G, the former being connected to the bracket arm and the flexible shaft depending from the latter. On the inner end of the flexible shaft is a driven pulley H, while on the shaft of the motor C

is a driving pulley I. For the purpose of properly supporting and guiding the driving cord or belt J which passes about the driving and driven pulleys, a series of guide or idle pulleys are provided as follows:—A single pulley K is mounted on the side of the bracket arm at or near the outer end of the inner section B and is adjustable along said section in order to alter or adjust the tension of the driving cord, a screw K^1 being employed for securing the pulley in any desired position. Another single pulley L is supported under the said inner section of the arm, this pulley being carried by the outer section B^1 which, as before stated, telescopes in the inner section. Finally, a pair of pulleys M are mounted on the intermediate member F^2 of the engine-head. The driving cord or belt passes from the driving pulley I to the idle pulley K, to the idle pulley L, then to one of the idle pulleys M; then after passing about the driven pulley H it passes to the other pulley M and from thence back to the driving pulley I. Pulleys K and L are arranged after the manner of the well known compensating pulleys commonly used upon this class of dental engines. Their object is to maintain the proper tension on the driving cord when the engine arm is pulled out or pushed in, for when the outer section B^1 is moved inward and the distance between the pulleys H and I thereby lessened, the distance between the pulleys K and L is correspondingly lengthened.

For the purpose of giving flexibility to the connection between the end of the bracket arm and the engine arm, thereby permitting the latter great freedom of movement, the following joints are provided in the engine-head: The inner member F is swiveled at f to the outer end of the bracket arm; the intermediate member F^2 is pivoted at f^1 to an angular extension F^1 of the inner member, so that the intermediate member may rock laterally in respect to the inner member; and the outer member G of said head is pivoted at g to said intermediate member, the pivot g being disposed at a right angle to the pivot f^1 and permits of the outer member G being rocked in line with the longitudinal axis of the bracket arm. If desired the outer member G may be made in two parts G and G^1 having swivel connection at g^1. With a head provided with these or equivalent joints, the entire head and engine arm may be freely turned about the bracket arm; the member G and engine arm rocked relatively to the bracket-arm at a right angle to said turning movement of the entire head; and the engine-arm may be turned about the swivel g^1, provided the same is used. It is best to provide suitable limits to the movements afforded by the joints g and g^1.

It will be obvious that as the engine head is turned about its swivel connection with the bracket arm the relative positions of the pulleys M M are changed and there is more or less liability of the driving cord interfering with itself at certain points or with the compensating pulley K. The joint f^1, however, between the inner and intermediate members of the engine head, which permits the pulleys M M being rocked laterally, overcomes this tendency and entirely prevents said interference of the driving cord. The pivot f^1 is best located near said pulleys M M so that they will have the least amount of movement when moved about this pivot. In practice when the engine arm is pulled to one side the pulleys M M will first rock about the pivot f^1 and then if necessary the engine head will turn about the swivel f. Stops m^1 and m^2 shown in Fig. 4, may be provided for limiting the lateral movement of the engine head pulleys in opposite directions. Since, in the engine herein shown and described, there is less liability of interference of the driving cord on one side than on the other, the stops are not placed opposite each other but one below the other. By this means practically the full movement is allowed on one side, while on the other side the movement is much restricted. This is clearly indicated by dotted lines in Fig. 4.

N indicates the conductor leading from the motor to the controlling device.

The engine arm instead of being a cable, as shown, may be the arm of a "cord" or "belt" engine.

I claim as my invention:—

1. In a dental bracket engine, the combination of a supporting arm consisting of an inner section rigidly projecting from a wall plate and an outer section connected to said inner section by a vertical pivot so as to swing horizontally, and curved outwardly and downwardly, an electric motor connected to the lower extremity of the outer section of said supporting arm by a horizontal pivot at a point below and in advance of the vertical pivot between the sections of said supporting arm, and a bracket arm rigidly connected to said electric motor, said bracket arm extending in a line intersecting the axis of the motor and the axis of the pivot connecting said motor and said supporting arm.

2. In a dental bracket engine, the combination of a bracket arm, an engine head having an inner member swiveled to the outer end of said bracket arm, an intermediate member carrying a pair of idle pulleys and pivoted to said inner member to rock

laterally in relation thereto, and an outer member pivoted to said intermediate member, the last named pivot being disposed at a right angle to the first named pivot so that the outer member may be rocked in line with the longitudinal axis of the bracket arm, an engine arm depending from the outer member of said engine head, and stops for limiting the lateral movement of said intermediate member.

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

JOHN F. HAMMOND.

Witnesses:

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