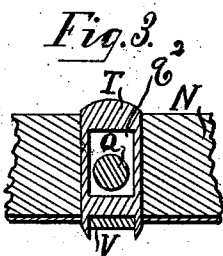
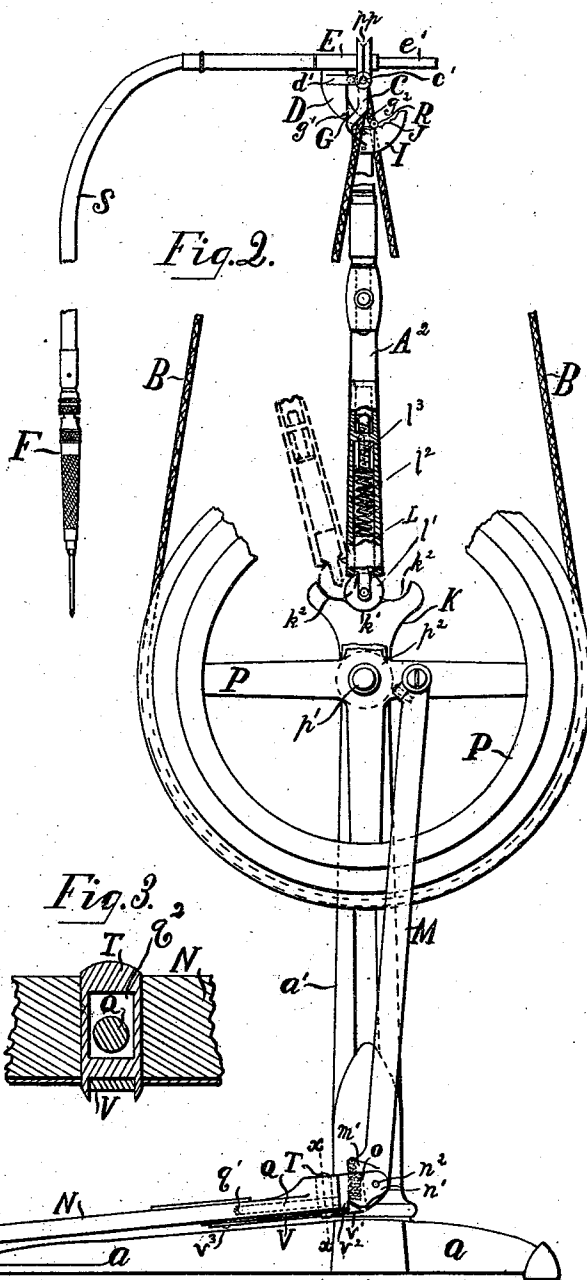
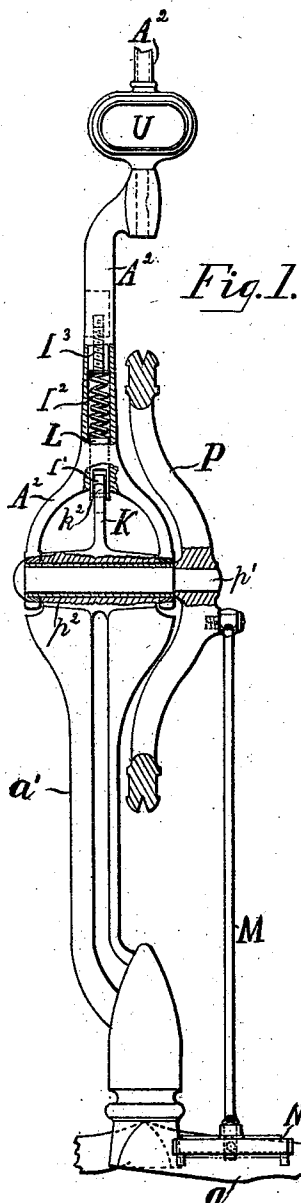


G. SIBLEY.
DENTAL ENGINE.

No. 550,114.

Patented Nov. 19, 1895.



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Fig. 4.

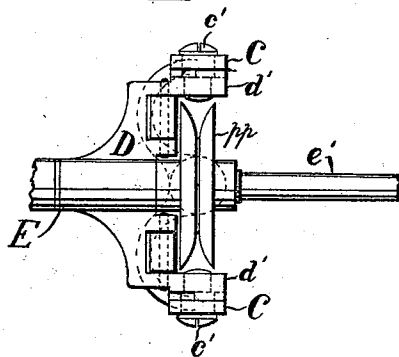


Fig. 5.

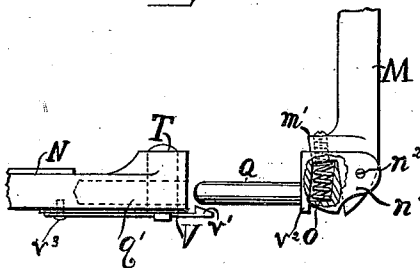


Fig. 6.

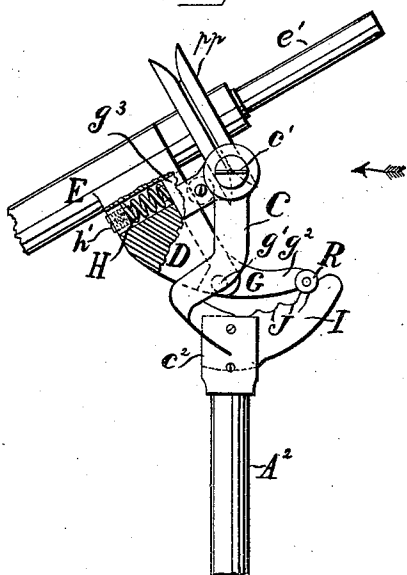
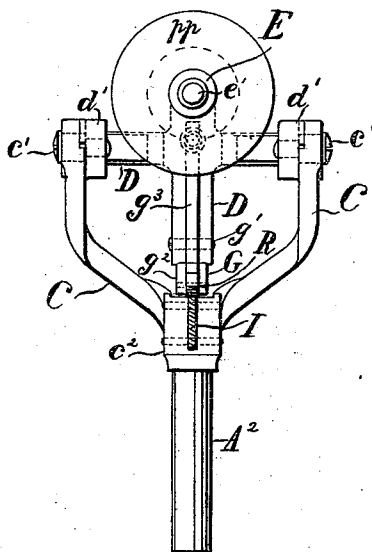


Fig. 7.



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DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 550,114, dated November 19, 1895.

Application filed January 30, 1895. Serial No. 536,641. (No model.)

To all whom it may concern:

Be it known that I, GIDEON SIBLEY, a citizen of the United States, residing at 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 full, clear, and exact description, reference being had to the accompanying drawings, of which—

10 Figure 1, Sheet 1, is a sectional side elevation, a part of the base and the upper part of the rocking standard being broken off. Fig. 2 is a front elevation with a portion of the standard in section, a different position thereof being indicated by dotted lines; Fig. 3, a section, enlarged, on line *xx*, Fig. 2; Fig. 4, Sheet 2, a plan view of the driven pulley, its shaft, and connections; Fig. 5, a side elevation, partly in section, of the treadle and crank-rod connection, the parts being detached; Fig. 6, a side elevation, partly in section, of the upper end of the standard with the parts mounted thereon, the driven pulley-shaft being in an inclined position; Fig. 7, an elevation of the parts seen in Fig. 6, looking in the direction of the arrow in that figure, the pulley-shaft being shifted to the horizontal position.

This invention relates to dental engines wherein the usual tool-carrying flexible shaft is driven by a band or cord running over a small pulley on the straight or rigid shaft to which the flexible shaft is connected and over a wheel journaled in the support rising from the base of the machine, and which wheel is driven usually by a foot-operated treadle.

The main objects of the invention are, first, to provide a simple and efficient mechanism whereby the tool-carrying shaft may be readily elevated and depressed by a rotary movement in a vertical plane and maintained in the desired position while the machine is being operated, and, secondly, mechanism whereby the standard supporting said shaft and adjuncts may be readily drawn over from a vertical position or rocked to and from the operator also while the machine is running, thereby enabling the working tool to be easily and nicely adjusted for the particular work to be done at the instant, the said standard

returning automatically to the normal or vertical position when released.

One feature of the invention consists in the combination of the usual tool-holding shaft and its driven pulley and the box or sleeve in which it rotates, which sleeve is suitably pivoted on a horizontally-rotatable arm pivoted on the top of the supporting-standard, a lug or projection secured to said sleeve, to which is pivoted a spring-controlled pawl carrying a small roller at its free end, together with an arm secured to and projecting from the said pivoted arm on the top of the standard, the upper edge of which arm is scalloped or provided with a series of indentations with which the roller on the spring-controlled pawl is adapted to engage, the construction and arrangement being such that by suitably raising or lowering the tool-carrying shaft without affecting its rotation the small roller will be caused to pass out from one of the said indentations to another and will be there retained by the stress of the spring, and consequently maintain the said shaft at the desired angle of elevation or depression.

A second feature of the invention consists in the combination with the usual rocking standard of well-known kinds of dental engines, of a rack upon the driving-wheel support beneath the lower end of the rocking standard, which rack is provided on its upper edge with a series of concave indentations, and a spring-controlled detent adapted to slide vertically within a recess in the lower end of said standard and carrying at its free projecting end a pivoted roller adapted to engage any one of said indentations in a manner whereby the standard, while maintained normally in a vertical position, it and the tool-holding shaft and its connections may be readily rocked to and fro to the desired position or angle while the machine is at work.

Other features of the invention relate to minor devices or mechanisms, which will be hereinafter described and duly pointed out.

Referring to the annexed drawings, *a* is the usual base of the machine, from which rises the rigid post *a'*, to which is journaled the large driving or belt wheel *P*, its shaft *p'* running in a box *p*².

*A*² is a standard bifurcated at its lower end

to span the box p^2 . Its forks are pivoted on the projecting ends of the shaft p' , or, as shown in the present instance, upon the sleeve or journal-box of said pin, so as to allow the rocking movement of the standard A^2 , as hereinafter described. The latter is usually composed of two sections, the one telescoping within the other and held by a set-screw in order to make taut or adjust the driving-band B.

C is a vertical bifurcated arm with a sleeve portion c^2 at the junction of the forks of the arms, whereby it is pivoted, so as to be capable of being rotated horizontally on the top of the standard A^2 . To and between the free ends of the forks of the arm C is pivoted on studs c' a lug or head D, having lateral forks d' , through or into the ends of which the studs c' pass. On the top of the head D is a sleeve E, through which passes the straight driven shaft e' , which has at one end the small pulley p p and at the other end the flexible shaft S, carrying the usual tool-holding handpiece F, Fig. 1. On the lower end of the head D is an angular pawl G, similar in the present instance to a bell-crank, pivoted on a through-pin g' . The projecting limb g^2 of this pawl has pivoted in its extremity a small roller R. The other limb g^3 , which lies within a vertical slot in or bifurcation of the head D, is pressed against by a spring H, also within the head, (see Fig. 6,) the stress of which spring I usually make adjustable by means of a follower-screw h' .

I (see Figs. 2, 6, and 7) designates an arm, which is secured to or forms an integral part of the bifurcated arm C and which extends upwardly from the sleeve portion c^2 . Said arm is formed with a curvilinear upper edge, on which are a series (four being shown in the present instance) of scallops or inclinations J, which are designed to receive a roller R, as seen more clearly in the enlarged view, Fig. 6.

The practical operation of the parts is as follows: If the operator desires to raise or lower—that is, to change the angle in the arc of a vertical plane of the shaft e' , to which the flexible shaft S is connected—he may readily do so by simply raising up or down, as desired, shaft e' or the flexible shaft, whereupon the head D, in the sleeve of which the shaft e' runs and is pivoted, as previously described, on the bifurcated arm will turn on the pins c' , and the small roller R of pawl G will pass against the stress of the spring, from the indentation of the arm in which it is engaged at the time, into any other one of the series on that side, as desired, the indentations being of course sufficiently shallow with regard also to the force of the spring to allow the roller to rise.

In Figs. 2, 4, and 7, the shaft e' , &c., is shown in the horizontal and in Fig. 6 in an inclined position. By means of the described construction I am enabled to dispense with the ratchet device, and the change of the an-

gle of the driven shaft e' and adjuncts may be quickly made by the use of one hand.

The next feature of my invention relates to the device for permitting a certain rocking movement of the pivoted standard supporting the driven tool-carrying shaft or shafts, as hereinbefore alluded to. This device is as follows: K, Figs. 1 and 2, is a cam-rack on the top of the box p^2 of the journal of the driving-wheel P. It is provided on its upper edge with concave indentations k' and k^2 , as seen more clearly in Fig. 2, the middle one of which k' is immediately beneath the lower end or junction of the forks of the rocking standard A^2 . Within a vertical recess of the latter is a detent L, that has a roller l' , journaled in its lower or projecting end, which roller is adapted to enter any one of the indentations in the rack K. A spiral spring l^2 within the recess of the standard above the detent L presses downwardly against the latter, the degree of the pressure being preferably made adjustable by means of a follower-screw l^3 . Normally standard A^2 is in the vertical position, as seen in Fig. 2, being so maintained by the force of the spring l^2 , which tends to keep the roller in the middle concavity k' . When, however, the operator of the machine wishes to rock the standard, he merely draws forward the latter, or pulls toward himself on the flexible shaft as he grasps the tool-holder, whereupon the spring l^2 permits the roller to rise out of the middle concavity into, or partly into, the other concavity k^2 on that side, (the side toward the operator,) as indicated by the dotted lines in Fig. 2. Upon releasing hold of the standard or shaft the former will return automatically to the vertical position, it being understood that the depth and arrangement of the concavities are such, as shown, whereby the roller may readily pass from the outer ones to the middle one from the stress of the spring l^2 . I remark that these coacting parts may be reversed without departing from the principle of this feature of my invention—that is to say, the rack K may be secured to the standard and the sliding detent L with its roller located in a suitable socket in the box or housing of the shaft of wheel P.

Another feature of my invention is shown in Fig. 2 and in part in Figs. 1 and 5. This consists of a device for insuring the driving-wheel P, driven by the treadle-bar N, and connection or pitman M from stopping on the dead-center and is as follows: n' is the bifurcated free end or nose of the treadle-bar, between the forks of which is pivoted on a pin n^2 the lower end of the crank-rod. The latter has a horizontal backwardly-projecting offset m' . Within the space formed by the sides of the forks of nose n' of the treadle-bar and the bottom thereof, which is closed, is a spiral spring O, whose lower end rests upon said bottom and whose upper end bears, with suitable stress, against the under side of the

offset m' of the pitman. It will be obvious that while the spring will not perceptibly interfere with the driving of the wheel the tendency of the spring O is to throw the wheel off the center as soon as the operator removes the foot from the treadle—that is to say, the tendency is in this case to carry the wheel, treadle, &c., to about the position shown in Fig. 2.

10 Another feature of the invention relates to means for readily detaching the pitman from the treadle-bar, more especially in order to permit the ready removal and replacing of the usual integral endless driving belt or cord. 15 I accomplish this result by making the end or nose of the treadle-bar to which the crank-rod is pivoted detachable. To that end I provide the same with a pin-like rearward extension Q, Figs. 2, 3, and 5, adapted to enter a corresponding socket q' in the forward end of the main portion of the treadle-bar. The two parts of the treadle-bar are held together by means of a spring-catch V, the inclined or latch end v' of which springs over a lip v^2 on the under side of the nose part of the treadle-bar when the extension Q is pushed into its socket to its full extent. The rear end of the catch is secured to the under side of the treadle-bar by a screw v^3 . As a ready means for releasing the catch when it is desired to detach the crank-rod, I employ a pin T, which is arranged to play in a vertical opening in the treadle-bar toward the free end of the spring-catch. The lower end of the pin rests against the upper side of the latter, and its upper end projects above the top of the treadle-bar, as seen. To permit the separation of the nose n' , &c., from the treadle-bar, the operator presses with his foot or otherwise upon the projecting pin T sufficiently to release the catch from engagement with the lip. Bolt Q passes through a slot q^2 in the pin T, as shown in the detail section, Fig. 3. This bolt forms a permanent part of the treadle-bar and is prevented from withdrawing by the extension Q of the nose.

A minor improvement which I have devised in dental engines of the general class described, whereby they may be conveniently

carried about or shifted, consists in swelling out the standard A^2 a short distance above the driving-wheel, so as to form an opening U, Fig. 1, adapted to receive the hand of the operator.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a dental engine the mechanism for adjusting the angle of the tool holder shaft and adjuncts, and maintaining the same in the desired position, consisting of the combination of the head secured to the sleeve in which said shaft is journaled, the spring-controlled pawl pivoted in said head and having a roller at its free end, together with the arm having a series of indentations with which the said roller is adapted to engage, substantially as and for the purpose described.

2. In a dental engine, the combination with the treadle bar having its free end portion or nose bifurcated, of the pitman having its lower end pivoted between the forks of the said nose, and having above its pivot a horizontal backward projection, and a spiral spring seated within the space formed by the sides of the said forks and the bottom thereof, which is closed, the lower end of said spring resting upon the said bottom and its upper end bearing against the under side of said offset, whereby the parts are prevented from stopping on center, substantially as specified.

3. In a dental engine, devices for permitting a rocking motion of the pivoted standard supporting the tool-holding shaft, consisting of the combination therewith of the fixed rack, having a series of indentations as described, the spring-controlled detent and the roller carried thereby, adapted to engage said indentations, the construction and operation being substantially as and for the purpose described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

GIDEON SIBLEY.

Witnesses:

GEO. W. REED,
WALTER C. PUSEY.