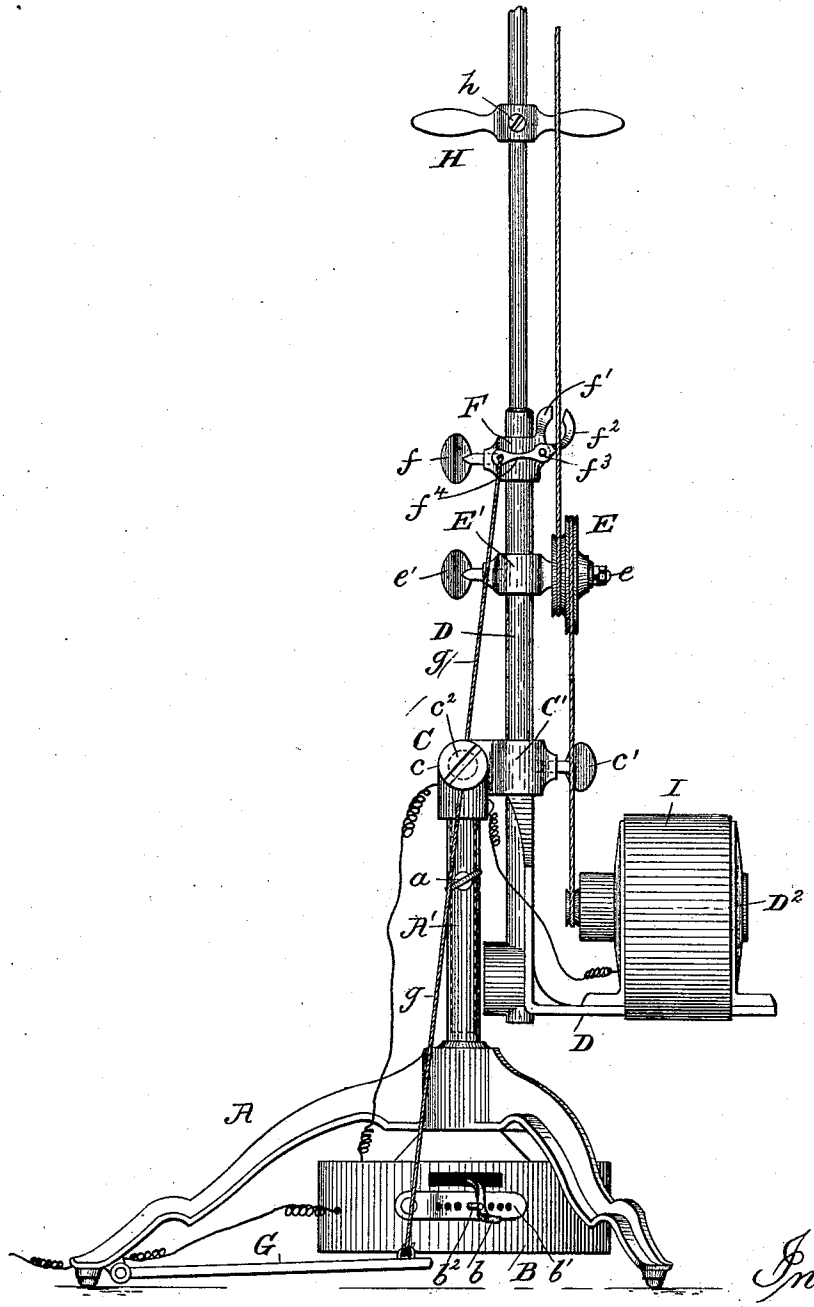
(No Model.)

A. C. MILLER & G. F. WELLS.

DENTAL ENGINE.

No. 471,877. Patented Mar. 29, 1892.



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UNITED STATES PATENT OFFICE.

ANDREW C. MILLER AND GARDNER F. WELLS, OF AUBURN, NEW YORK.

DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 471,877, dated March 29, 1892.

Application filed November 4, 1891. Serial No. 410,832. (No model.)

To all whom it may concern:

Be it known that we, ANDREW C. MILLER and GARDNER F. WELLS, both citizens of the United States, and residents of Auburn, county of Cayuga, and State of New York, have invented a new and useful Improvement in Dental Engines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making part of this specification.

Our invention relates to an improvement in dental engines; and its object is to simplify the device described in our patent dated November 3, 1891, No. 462,267, and to so construct and arrange the parts thereof as to provide for certain adjustments which may be necessary under any and all conditions of the work required.

Our invention consists in the combination, with the rheostat and its switch-lever, of a perforated plate or bracket secured to the casing thereof and a detachable pin or stop adapted to engage any of the perforations in said plate and limit the throw of the lever; in the combination, with the staff of the engine, of an adjustable double pulley and means for holding said pulley at the desired adjustment; also, in the combination, with the staff, of an adjustable lifting and carrying handle.

It also consists in the combination, with the engine-staff, of an adjustable belt-gripping device and means for operating the same, in means for holding the staff at any desired inclination, and also in the means for changing the height of the staff-joint or pivot for accommodating motors of varying weight, and in certain other details of construction and arrangement hereinafter fully described and claimed.

The accompanying drawing represents an elevation of so much of a dental engine as is necessary to show our improvements applied.

A represents a base or pedestal provided with suitable supporting feet or legs and with an upright hollow standard A′. The feet of said pedestal are provided with rubber nibs or balls to prevent slipping of the feet and to deaden the noise of the motor when in operation.

B indicates the rheostat, preferably located between the legs of the pedestal and supported thereby.

b is the switch-lever, projecting through a slot in the casing of the rheostat, and *b′* a perforated gage-plate adapted to receive a pin b^2 in any one of its perforations for regulating the throw of the lever *b*. The object of this arrangement is to enable the operator to always bring the lever to the point where the speed is found to be best adapted to the work he is at the time engaged in, it being understood that the farther the lever is moved the greater the speed obtained.

C indicates a swivel-head provided with jaws *c* for the reception of the staff-collar C′, and with a shank or shaft, (indicated in dotted lines,) which extends downwardly therefrom into the hollow standard A′. *a* is a set-screw for holding said shank or shaft and its swivel-head at the desired adjustment. The staff-collar C′ is provided with a set-screw *c′*, by means of which the staff may be elevated or lowered and held in its adjusted position.

c^2 represents a thumb set-screw passing through the jaws *c* of the head C, and also through a lug on the staff-collar C′, by means of which the staff is pivoted to the head C, and when deflected may be held at any angle by clamping the parts tightly together.

D represents the staff, which is provided with an L or foot D′ for supporting and carrying an electric motor D^2.

E indicates a double pulley or two pulleys of different diameter for reducing the speed derived from the armature-shaft of the motor. This double pulley is mounted on and carried by a stud-shaft *e*, projecting laterally from the collar E′, which is adapted to slide loosely up and down upon or be adjustable vertically on the staff D, or to be secured in fixed relation to the staff by means of a set-screw *e′*, as shown. The band or belt from the armature-shaft pulley passes over and drives the larger pulley of said double pulley, from whence motion is imparted to the drill-shaft pulley through a supplemental belt or band running around the smaller pulley. When the sleeve E′ is left free to slide on the

staff, as explained, for equalizing the tension on the oppositely-extending belts, it is also free to rock on said staff to accommodate itself automatically to the swinging of the driving-pulley on the flexible drill-shaft, and thereby prevent accidental displacement or running off of the upper belt.

F represents another collar or sleeve surrounding the staff D and adjustable up and down by means of a set-screw *f*. Said collar carries one fixed jaw *f'* and one movable jaw f^2, which form a belt-gripping device. The movable jaw f^2 is pivoted at f^3 to said collar F, and has a lever-arm f^4 projecting beyond said pivot, from which a cord *g* extends downward to a foot-lever G, pivoted to the base or pedestal A of the engine.

The operation of this grip is as follows: The driving belt or band running over the pulley-wheels passes between the jaws *f'* and f^2, and when from any cause it is necessary to suddenly stop the drill or engine the foot-lever G is depressed, pulling down cord *g* and bringing the jaws of the gripping device quickly together and clamping the belt, whereby further movement of the latter is prevented and the drill-shaft is brought to a sudden stop, while the motor is still allowed to go on. In order to avoid changing the length of the cord *g* under the varying positions and angles of the staff D, the cord is passed through an eye near or behind the head of the thumb set-screw c^2 of the swivel-head C, which being the pivotal center is always in about the same relation to the base and staff under any adjustment of the latter.

H indicates a carrying and lifting handle, which has a central aperture embracing the staff D and a set-screw *h* for securing the same at any adjustment of height on said staff.

I represents a protecting-cover of leather or equivalent material which surrounds the motor, excludes dust, and muffles the noise and buzz of the motor.

By the arrangement described, permitting the vertical adjustment of the height of the swivel-head C relative to the tubular standard and of the staff relative to said swivel-head, the lower short arm of the staff, carrying the motor, can be adjusted in length, as desired, to adapt it to the size and weight of the motor, thereby insuring the maintenance of the staff in its normal upright position without interference with the pedestal.

Having thus described our invention, we claim as new—

1. In a dental engine, the combination, with the rheostat and its lever, of a perforated gage-plate and a detachable pin or stop, for the purpose substantially as described.

2. The base or pedestal of a dental engine provided with an upright hollow standard, a swivel-head supporting the engine-staff and provided with a vertical shank sliding and adjustable in said hollow standard, and a set-screw for holding said swivel-head at any desired adjustment or degree of elevation, in combination with the engine-staff pivoted to said swivel-head, the interposed collar surrounding the staff and pivoted to said swivel-head, the set-screw for holding the staff at any desired elevation, and a motor carried by said pivoted staff and acting as a counterbalance to return the staff to its normal position, as specified.

3. In a dental engine, the combination, with the pedestal and its upright hollow standard, of the swivel-head C, provided with the shank vertically adjustable in said standard, and the collar C', pivoted to said head, the staff supported and adjustable vertically in said collar, and the set-screws for holding said swivel-head and pivoted staff at any height, substantially as described.

4. The combination, with a dental engine, of a gripping device for stopping the belt thereof, as and for the purpose stated.

5. In a dental engine, the combination, with the staff thereof, of a sleeve or collar surrounding and adapted to slide and turn freely on said staff and provided with a stud-shaft, and a double pulley interposed between belts extending in opposite directions and mounted on said stud-shaft, whereby said collar and pulley are adapted to automatically adjust themselves up and down for preserving an equal tension on the opposing belts and also to swing automatically around said staff for accommodating the movement of the pulley on the flexible shaft, all substantially as described.

In testimony whereof we have hereunto set our hands this 31st day of October, A. D. 1891.

ANDREW C. MILLER.
GARDNER F. WELLS.

Witnesses:
GEO. C. PEARSON,
W. H. KOSTERS.