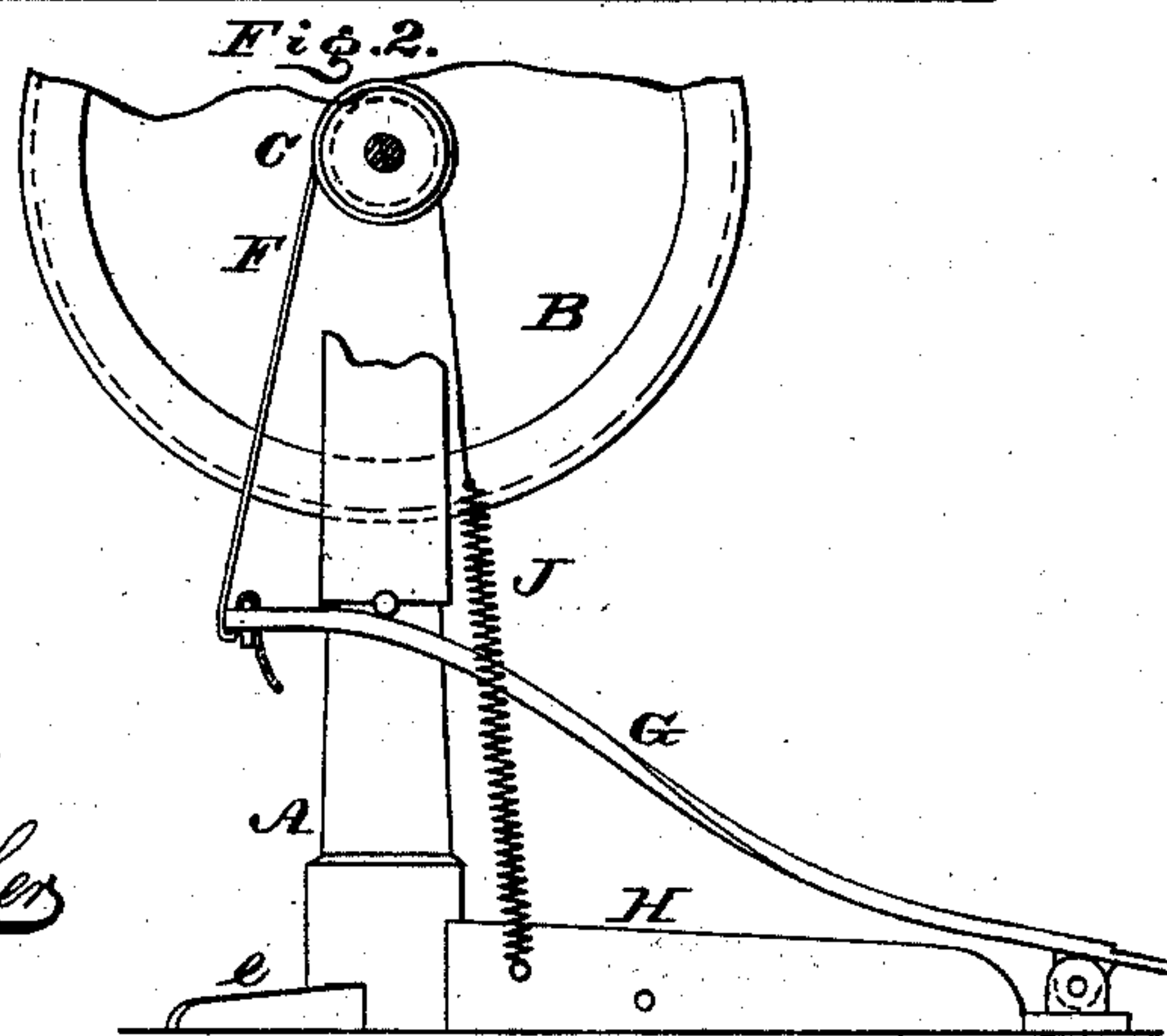
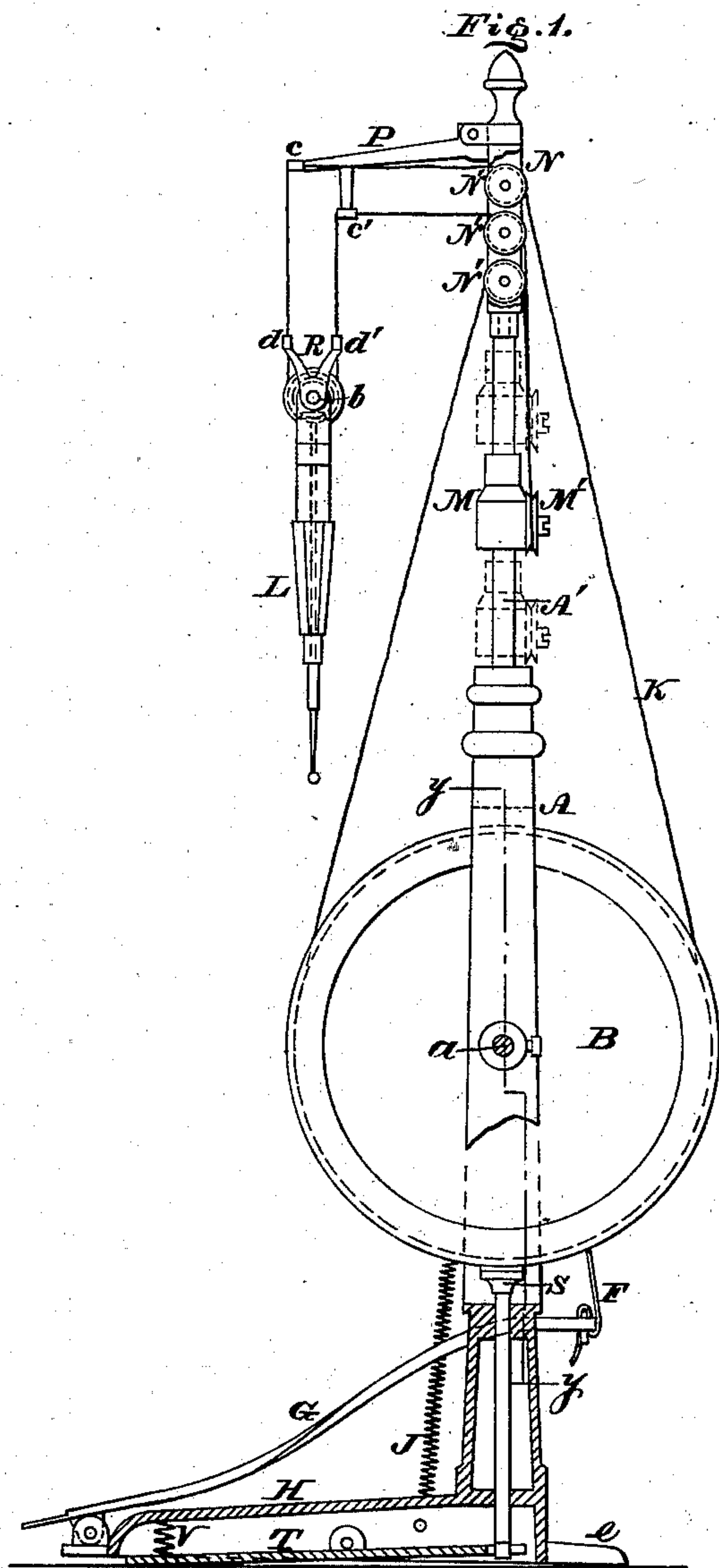


(Model.)

W. H. KIMBALL.  
Dental Engine.

No. 242,936.

Patented June 14, 1881.



Witnesses:

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# UNITED STATES PATENT OFFICE.

WILLIAM H. KIMBALL, OF BURLINGTON, NEW JERSEY.

## DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 242,936, dated June 14, 1881.

Application filed December 18, 1880. (Model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. KIMBALL, a citizen of the United States, residing at Burlington, in the county of Burlington, State of New Jersey, have invented a new and useful Improvement in Dental Engines, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a side elevation, partly broken away, of the dental engine embodying my invention. Fig. 2 is a view of a portion of the opposite side.

Similar letters of reference indicate corresponding parts in the several figures.

My invention relates to improvements in dental engines provided with means for permitting the utmost freedom of manipulation of the hand-piece, and preventing the slack of the belt or band of the driving-wheel, or change of tautness of the same, when said piece is moved toward or from the place of service of the burr or tool.

The invention consists of a single standard having fitted on it a sliding sleeve which carries a pulley, a hand piece or tool disconnected from said standard, an endless band which is run out and carried back with the advance and return motions of the hand-piece, a series of pulleys, and a guiding-arm, in combination, substantially as hereinafter set forth and definitely claimed.

It also consists of an improved manner of operating the brake for the driving-wheel.

Referring to the drawings, A represents a stand or frame, on which is mounted a power or driving wheel, B, having its axis or shaft *a* horizontally arranged, and receiving power in the present case from the treadle G, through the medium of the strap F, friction-sleeve C, and spring J, this feature, however, forming no part of the present invention.

H represents the base which supports the frame A and other parts of the engine.

The power of the wheel B is communicated to the endless belt or band K, which, by means of gearing *b* on the hand-piece L, communicates the power to the shaft of the burr or tool thereof.

On the unbroken standard A', rising from and rigidly secured to the frame A, is fitted a

vertically-sliding and rotary sleeve, M, and above the same is supported a rotary cap, N, carrying three parallel pulleys, N', having horizontal axes located one above the other. An arm, P, is hinged to the cap N and provided with guides or eyes *c c'*, the normal position of said arm P being down and horizontal and abutting against the cap N.

The hand-piece unattached to L has attached to its inner end a hinged yoke, R, having guides or eyes *d d'*.

The belt or band K is passed around the wheel B, and, starting from the periphery at one side, is run up over the upper pulley N', then through the guide *c* of the arm P, and the guide *d* of the yoke R, next around the pulley of the gearing *b* of the hand-piece, and returns through the guide *d'* and guide *c'*, then around the middle pulley N' and a pulley, M', on the sliding sleeve M, thence up around the lower pulley N', and down to the wheel B, to the starting-point.

It will be seen that the hand-piece L may be operated with the utmost freedom in all directions, owing to the pivotal connection of the piece with the yoke R, the rotation of the cap N on the rod A', and the rising and falling of the arm P when the piece is lifted above said arm and afterward lowered. Each pair of eyes *c c' d d'* keep the respective lengths of the belt or band duly separated and parallel, and the running of the belt is free without interference at any length. When the hand-piece is moved toward the patient or place of service, or from the stand, the belt or band is extended, as it were, the sleeve M yielding and rising on the standard A'; for while the lengths of the belt or band are shortened between the sleeve M and lower pulley N', they are increased between the upper and middle pulleys N' and hand-piece L, and thus the belt or band is not actually changed, and its tautness is preserved. When the hand-piece is moved toward the stand the weight of the sleeve M immediately draws down the belt or band passing around the pulley M' and takes up the slack thereof, whereby the tautness and service of the belt or band are preserved.

S represents a brake, which is adapted to bear against the wheel B, and its stem passes vertically through openings in the lower por-



tion of the bottom standard of the frame A. The base H is hollow, and in the same is fitted a lever, T, which extends longitudinally and horizontally, and has one end connected to the lower end of the stem of the brake. A spring, V, bears against the base H and the end of the lever T opposite to the brake-stem. It will be noticed that when the engine is not in service the outer end of the base H is elevated by the spring V, so as not to touch the floor. In this position the end of the lever T adjacent to the spring is forced downwardly against the floor, and causes its other end to elevate the brake and press its head against the wheel B. When the engine is required to be run the weight or pressure of the foot of the operator on the base H causes the elevated end of the latter to lower, the foot *e* acting as a fulcrum, and the spring-pressed end of the lever T is caused to rise, thus lowering the brake and clearing the head of the wheel B. When the operator leaves the treadle the spring V elevates the base and lowers the lever T, thus immediately operating the brake and quickly stopping the engine.

I am aware that it is not new to pass an endless band around a pulley which may be raised and lowered on a standard; but in such case the band cannot be run out and taken in with the advance and return motions of the hand piece or tool, as in my device.

I am also aware that it is not new to employ an endless band which may be run out and taken in with the advance and return motions of the hand piece or tool; but the provision of holding the band taut is by means of a telescopic standard, which is obviated by my construction.

I am also aware that it is not new to provide the hand piece or tool with guides for the endless band, and that dental engines have been provided with hinged arms; but I am not aware that any such engine has an arm which carries guides for a running-out and taking-in band, and may be raised when the hand piece or tool is lifted above it; nor am I aware that any engine has a running-out and taking-in band, with guide-rollers and a tightening-pulley, and a single or unbroken standard which sustains the tightening-pulley, the rotary cap which carries the guide rollers or pulleys and the

hinged arm, and allows both a short and single vertically-immovable standard to be employed, as in my invention, wherefore I present novel and valuable features.

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

1. The single standard A', with the sleeve M sliding thereon, and carrying the pulley M', the driving-wheel B, the running-out and taking-in endless band K, passing from the standard to the hand piece or tool L, which is unattached to the standard, combined and operating substantially as and for the purpose set forth.

2. The standard A', sliding sleeve M, with pulley M', endless band K, driving-wheel B, and unattached hand piece or tool, in combination with the three pulleys N' N' N', having horizontal axes, one above the other, connected to the cap N, which is rotatable upon the standard A', substantially as and for the purpose set forth.

3. The standard, in combination with the hinged arm P, provided with the two guides *c c'*, the endless band K, and the hand piece or tool, substantially as and for the purpose set forth.

4. The standard A', sliding sleeve M, with pulley M', the running-out and taking-in endless band K, driving-wheel B, the pulleys N' N' N', arm P, with guides *c c'*, and the unattached hand piece or tool L, combined and operating substantially as and for the purpose set forth.

5. In a dental engine, the combination, with the driving-wheel, of a brake and the standard or frame having a rising and falling supporting-base, the brake being operated by said base, substantially in the manner and for the purpose set forth.

6. The driving-wheel B and brake S, with connected lever T, in combination with the base H, having a fulcrum-foot, *e*, and the spring V, substantially as and for the purpose set forth.

WM. H. KIMBALL.

Witnesses:

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