No. 713,103. Patented Nov. 11, 1902.

F. HURLBUT.

DENTAL ENGINE.

(Application filed Jan. 14, 1902.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

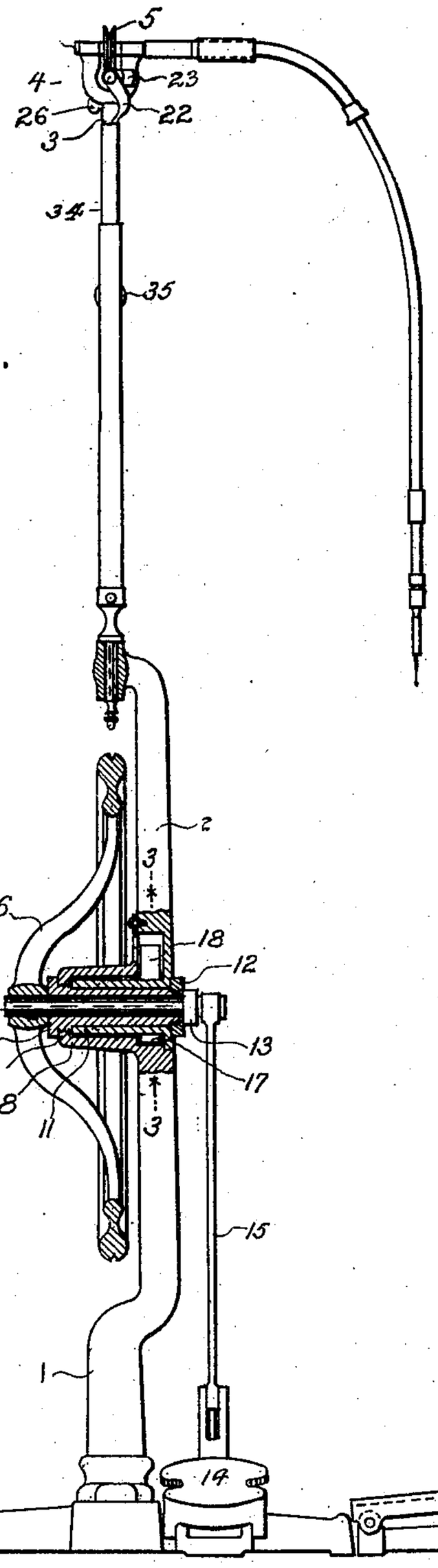
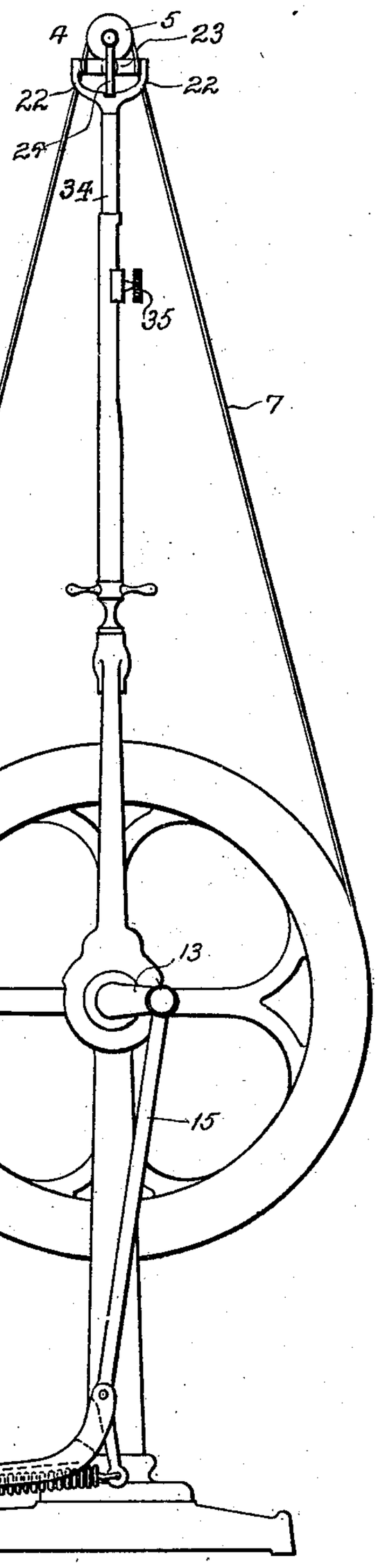


FIG. 2.



WITNESSES:

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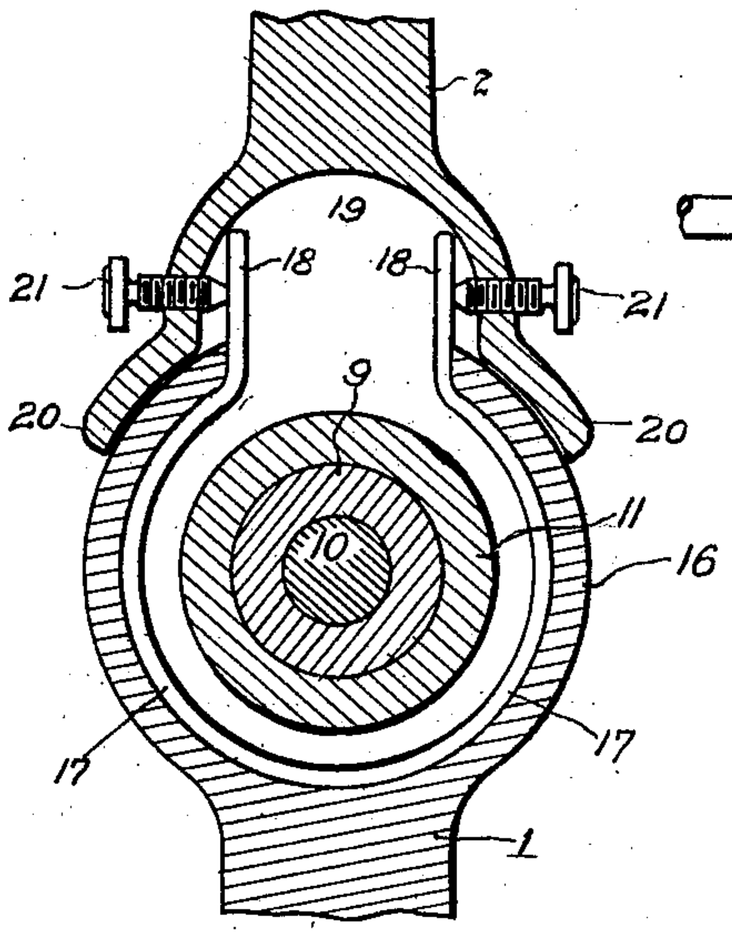


FIG. 3.

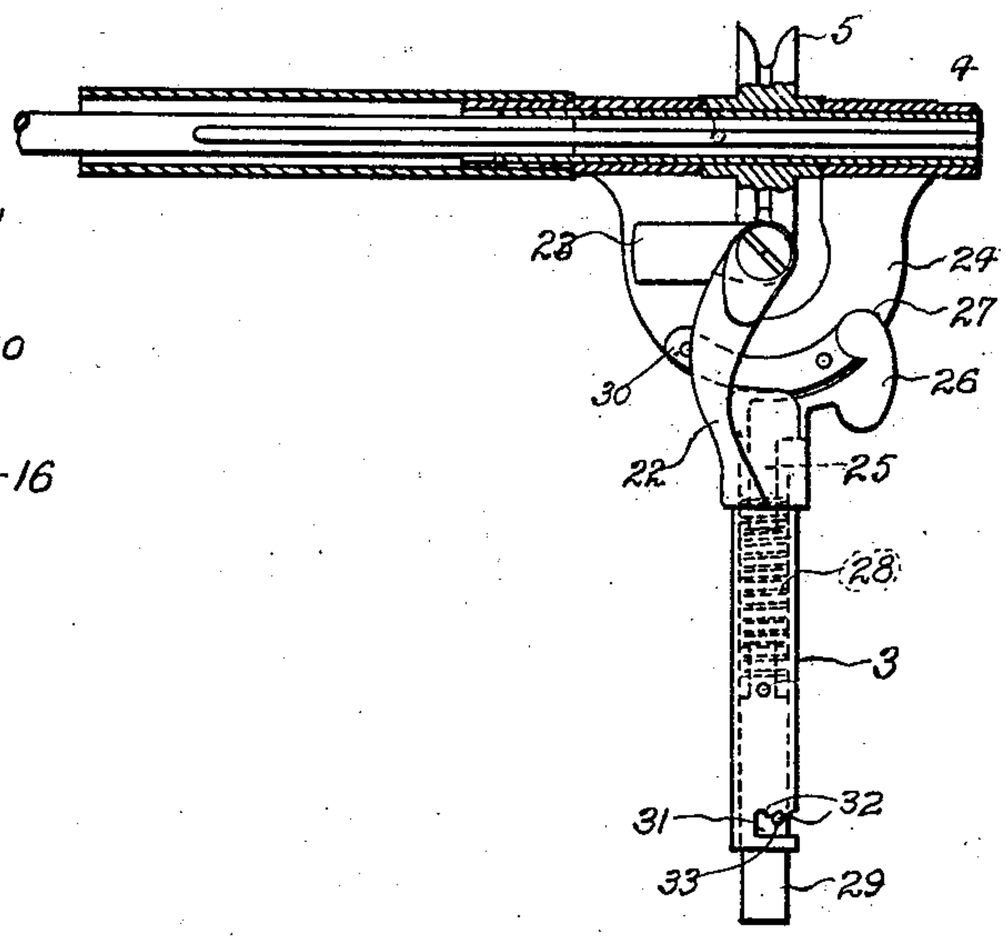
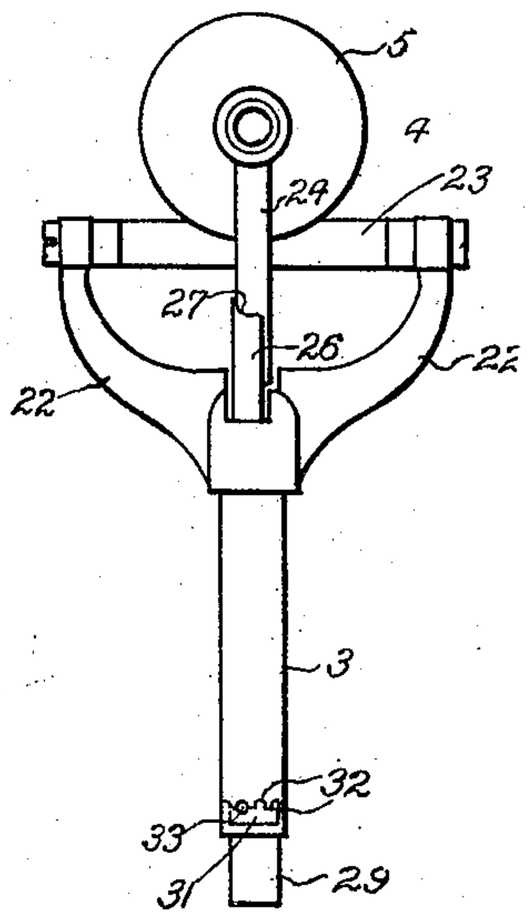


FIG. 4.

FIG. 5.



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UNITED STATES PATENT OFFICE.

FRANK HURLBUT, OF CHICAGO, ILLINOIS.

DENTAL ENGINE.

SPECIFICATION forming part of Letters Patent No. 713,103, dated November 11, 1902.

Application filed January 14, 1902. Serial No. 89,712. (No model.)

To all whom it may concern:

Be it known that I, FRANK HURLBUT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Dental Engines, of which the following is a specification.

My invention relates to what are known as "dental engines;" and its object is to provide a simple and efficient device of this class embodying certain new and advantageous features of construction which will be understood from the description hereinafter given.

In the drawings, Figure 1 is an edge elevation of my dental engine with the drive-wheel in section; Fig. 2, a side elevation of the engine; Fig. 3, an enlarged section on the line 3 3 of Fig. 1, and Figs. 4 and 5 detail views of the engine-head.

The engine comprises, essentially, a main standard 1, supported on the floor and having a tilting standard 2, which preferably telescopes and receives at its upper end the stem 3 of the engine-head 4. This head carries, as usual, a pulley 5, rotated by the drive-wheel 6 by means of a cord or belt 7.

Referring to Fig. 1, the main standard 1 is provided with a laterally-extending boss or shell 8, into which screws a bearing-sleeve 9, receiving the shaft 10, secured to the drive-wheel. The tilting standard 2 has a hub 11, preferably integral and embracing the sleeve 9. In order to hold the parts just described in coöperative relation, a nut 12 screws on the outer end of the sleeve, as shown in Fig. 1. The drive-shaft 10 is provided with a crank 13, worked by a treadle 14 through the pitman connection 15.

As illustrated in Fig. 3, the upper end of the main standard is in the form of a shell or cylindrical casing 16, which is open at its top. Within the casing is arranged a spring 17 of horseshoe form and preferably lying in a cavity and resting against the walls of the casing. This spring has vertical straight extensions 18, passing through the open top of the casing and projecting thereabove. Near the lower end of the tilting standard and above its hub is formed a cavity 19, having flaring side walls 20, whose extreme ends are on the same arc as the exterior of the casing 16, but which do not necessarily bear thereon, inasmuch as the tilting standard obtains its bearing through its hub. In the walls 20 of this standard are arranged the two set-screws 21, adapted to bear against the spring ends 18 for so adjusting the standard as that it will stand plumb under normal conditions.

When the standard 2 is moved or tilted to the left, Fig. 3, the right-hand set-screw 21 will force its end of the spring to the left, and obviously when the pressure is removed the standard will be restored to its normal vertical position by the tension of the spring. The above-described construction provides a long bearing for the tilting standard to insure smooth working, and, moreover, such construction is simple and easy of assembling and taking apart. Furthermore, a simple spring which is supported in an efficient manner provides the necessary tension.

The engine-head comprises, essentially, the stem 3, provided at its upper end with a yoke 22, on which is pivoted by means of the lateral arms 23 the frame or head proper which carries the pulley 5. The lower or under portion 24 of the head is a yoke whose lower surface is on an arc with the pivotal axis of the head as a center.

The stem 3 is hollow to receive the shank 25 of catch 26, which is adapted to snap into a curved notch or recess 27 (formed on one side of the yoke 24) when the engine-head is in operative position. The shank 25 is secured to a coiled spring 28, Fig. 4, arranged within the stem and fastened at its lower end to a rod or pin 29, inserted in the lower end of the stem 3. When the head is in operative position, as shown in Fig. 4, the catch is in engagement with the notch 27, being spring-pressed therein. When, however, it is desired to swing the head and the cable as usual carried thereby to inoperative position, the catch is disengaged by hand against its spring tension and the head swung, the catch riding against the side of the yoke 24. Upon restoring the head to operative position the catch will snap into the notch just as soon as the latter is presented to it.

As the parts of the engine-head are preferably made of brass nickeled, which would be liable to become worn by the catch, a portion

of the yoke 24 is cut away and the curved steel plate 30 is inlaid, and such plate being of less length than the cut-away portion leaves the notch or recess 27. By this arrangement the notch is thus conveniently formed, and at the same time the steel plate forms a hard surface for the catch to bear upon and also forms at one end a sharp unwearable edge for the notch. The catch fits the notch with accuracy and prevents any play of the head with respect to the stem.

It is found in practice that the spring 28 may be given the proper tension by the rod or pin 29, which may be riveted to the stem 4; but if it is desired to make provision for adjusting this tension the means shown in Figs. 4 and 5 may be adopted. The stem has on one side a slot 31, whose top edge has several teeth 32, adapted to be engaged by a lateral pin 33 upon the rod 29. It is evident that by adjusting the rod 29 the spring tension may be changed.

As shown in Figs. 1 and 2, the standard 2 has a telescoping section 34, which may be adjusted up or down to tighten or loosen the belt and held in adjusted position by the set-screw 35.

I claim—

1. In a dental engine, the combination of a supporting standard or frame having a lateral extension or boss, a bearing-sleeve arranged within such boss and extending centrally thereof, a driving-shaft bearing within said sleeve, and a tilting standard carrying an engine-head and having a hub bearing between said sleeve and boss, said boss, sleeve and hub being concentrically arranged.

2. In a dental engine, the combination of a supporting standard or frame having a lateral extension or boss, a bearing-sleeve arranged within said boss and extending longitudinally thereof, a driving-shaft bearing within said sleeve, a tilting standard having a hub bearing on said sleeve and within said boss, a spring coöperating with such tilting standard to hold it to normal position, and means for adjusting such normal position.

3. In a dental engine, the combination of a supporting standard or frame having a lateral boss or extension, a bearing-sleeve arranged in such boss, a shaft bearing in said sleeve, a tilting standard bearing on said sleeve, a spring coöperating with such tilting standard to hold it to normal position and means for adjusting such normal position, such means comprising a pair of set-screws arranged in the tilting standard and adapted to engage the spring.

4. The combination of a standard 1, a drive-wheel 6, having a shaft 10, a boss or shell 8 on the standard and forming an outer casing, a bearing-sleeve 9 receiving such shaft and secured in and extending centrally of the boss, a tilting standard 2 having a hub 11 embracing the sleeve 9 and arranged within said boss, a spring supported by the standard 1 and coöperating with the tilting standard to hold it in normal position, and means for actuating the shaft 10, the boss, sleeve and hub being eccentrically arranged.

5. The combination of a supporting-standard having at its upper end a hollow cylindrical casing open at its top and provided with a lateral extension or boss, a crank-shaft bearing in said boss, a curved spring arranged in and supported by said casing with its upper ends projecting through its open top, a tilting standard pivotally mounted on the supporting-standard and adapted to be engaged by said projecting spring ends.

6. The combination of a supporting-standard having at its upper end a hollow cylindrical casing open at its top and provided with a lateral extension or boss, a driving-shaft bearing in said boss, a curved spring arranged in said casing with its upper ends projecting through its open top, a tilting standard pivotally mounted on the supporting-standard, and set-screws arranged in such tilting standard and adapted to be engaged by said projecting spring ends.

7. In a dental engine, the combination of a supporting-standard having at its upper end a hollow cylindrical casing open at its top, a horseshoe-shaped spring loosely arranged within and supported by such casing and having straight ends projecting through said open top, and a tilting standard pivoted on the supporting-standard and engaged by said projecting spring ends.

8. In a dental engine the combination of a supporting-standard having at its upper end a hollow cylindrical casing open at its top, a spring arranged within such casing and having its ends projecting through said open top, a tilting standard pivoted on the supporting-standard and having a cavity receiving and adapted to be engaged by said projecting spring ends.

9. In a dental engine, the combination of a supporting-standard having at its upper end a hollow cylindrical casing open at its top, a horseshoe-shaped spring arranged within such casing and having straight ends projecting through said open top, and a tilting standard pivoted on the supporting-standard and having a cavity with flaring walls whose ends partially embrace said casing.

10. In a dental engine, the combination of a supporting-standard having at its upper end a hollow cylindrical casing open at its top, a horseshoe-shaped spring arranged within such casing and having straight ends projecting through said open top, a tilting standard pivoted on the supporting-standard and having a cavity partially embracing said casing and a pair of set-screws entering said cavity and adapted to contact the projecting spring ends.

11. In a dental engine, the combination of a supporting-standard having a top hollow casing and a cylindrical lateral extension, a bearing-sleeve secured in such extension, a driving-shaft in such sleeve, a tilting stand-

ard having a hub bearing on said sleeve, and having above its hub a cavity partially embracing said casing, and a flat horseshoe-shaped spring resting within said casing with its ends projecting therefrom and engaging the inner walls of said cavity.

12. In a dental engine, the combination of a supporting-standard 1 having a top hollow casing 16 and a lateral boss 8, a bearing-sleeve 9 received within and secured to the boss, a dental-engine driving-wheel 6 having a shaft 10 bearing in said sleeve, a tilting standard 2 having at its lower end a hub 11 encircling and bearing upon the sleeve 9 and also having a side cavity 19 formed above the hub, and having flaring walls 20 partially embracing the casing, a flat horseshoe-shaped spring 17 resting against the inner walls of said hollow casing with its ends 18 projecting through the top thereof which is open, and a pair of set-screws 21 projecting into the said cavity 19 from opposite sides and contacting the spring ends 18.

13. A dental-engine head comprising a stem, a frame pivoted on such stem, and a catch arranged on the stem and movable with a yielding pressure transversely of the direction of movement of the frame and adapted to engage it.

14. A dental-engine head comprising a stem, a catch pivoted thereon and a frame also pivoted on the stem and having means adapted to be engaged by the catch for holding the frame.

15. A dental-engine head comprising a hollow stem a catch having a shank received by and pivoted in the hollow stem, and a frame pivoted on the stem and provided with means adapted to be engaged by the catch for holding the frame.

16. A dental-engine head comprising a hollow stem containing a spring, a frame pivoted on the stem and a catch having a shank connected to the spring and tending to be rotated thereby and adapted to engage the frame.

17. A dental-engine head comprising a hollow stem containing a spring, a frame pivoted on the stem, a catch having a shank connected to the spring and adapted to engage the frame, the spring exerting a torsional pressure on the shank, and means for varying the tension of such spring.

18. A dental-engine head comprising a hollow stem containing a spring, a frame pivoted on the stem, a catch having a shank connected to the spring and adapted to engage the frame, and means for varying the tension of such spring, such means comprising a rod 29 arranged in the hollow stem and secured to the lower end of the spring and a pin 33 projecting through a notched slot provided in one side of the stem and adapted to engage different notches of the slot.

19. A dental-engine head comprising a stem, a frame pivoted thereon having a yoke 24 provided with a side notch 27, a spring-pressed catch 26 pivoted on the stem and adapted to engage said notch.

20. A dental-engine head comprising a stem, a frame pivoted thereon having a yoke provided with a cut-away portion on one side, a hard-metal piece inlaid in such cut-away portion and shorter than such portion so as to leave a notch 27, and a spring-pressed pivoted catch adapted to engage said notch.

FRANK HURLBUT.

Witnesses:
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S. E. HIBBEN.