(No Model.)

A. J. SAWYER.

DENTAL PLUGGER.

No. 405,123. Patented June 11, 1889.

FIG. 1.

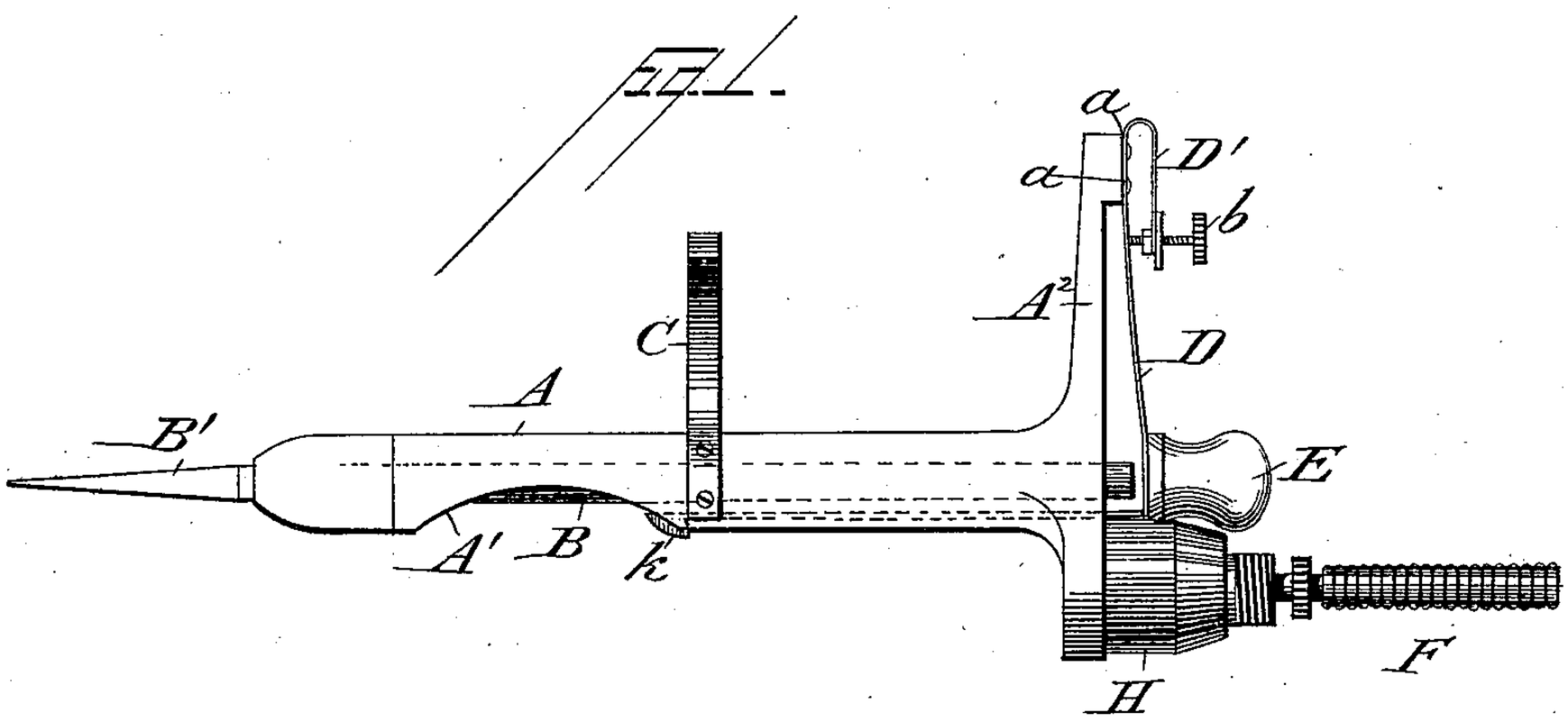


FIG. 2.

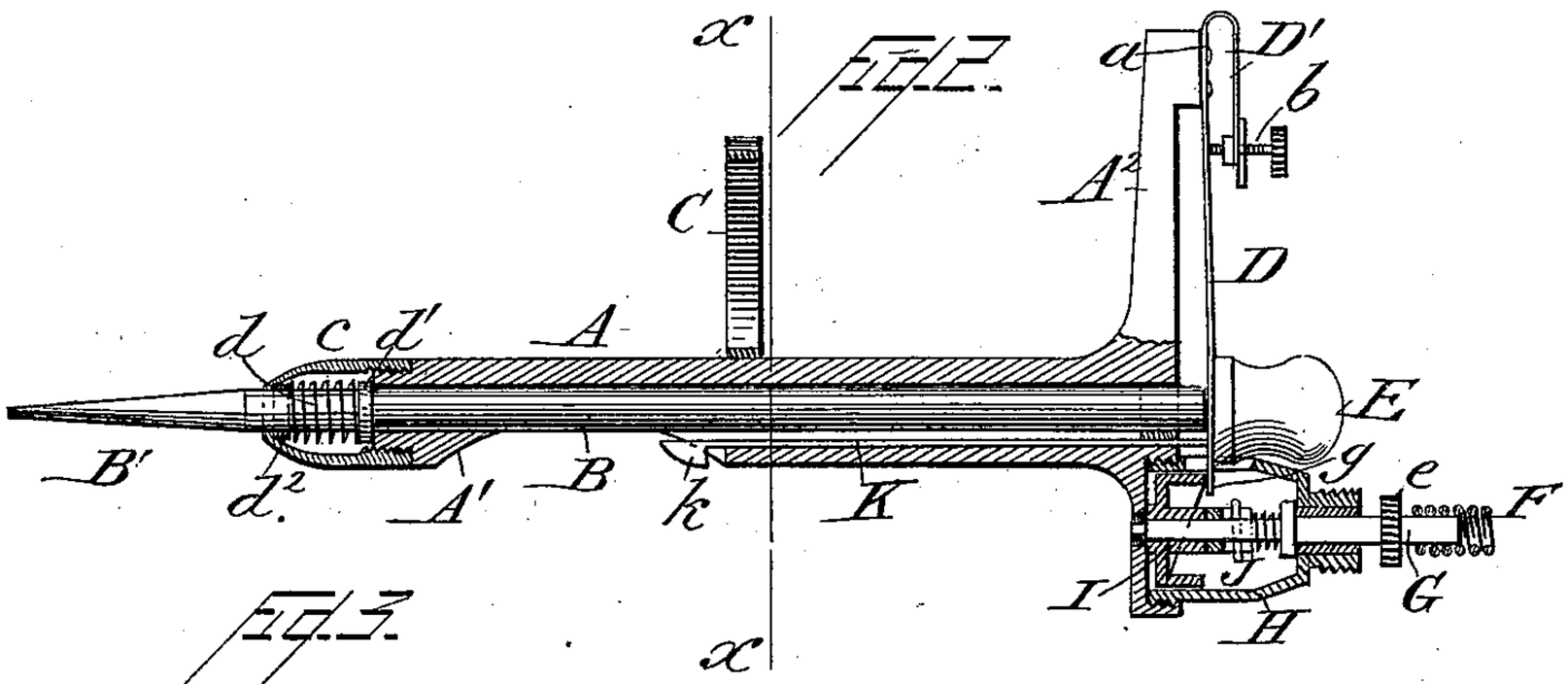


FIG. 3.

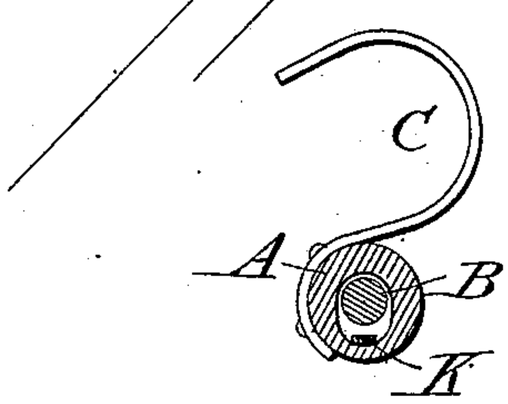


FIG. 4.

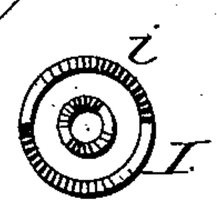
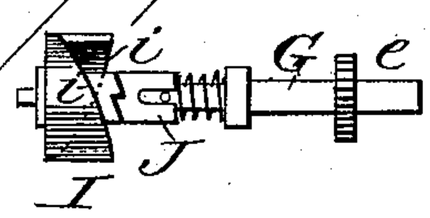


FIG. 5.



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UNITED STATES PATENT OFFICE.

ANDREW J. SAWYER, OF NEW MARKET, NEW HAMPSHIRE.

DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 405,123, dated June 11, 1889.

Application filed October 30, 1888. Serial No. 289,504. (No model.)

To all whom it may concern:

Be it known that I, ANDREW J. SAWYER, a citizen of the United States, residing at New Market, in the county of Rockingham and State of New Hampshire, have invented certain new and useful Improvements in Dental Pluggers; 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.

This invention relates to an improvement in dental pluggers or mallets, the object thereof being to simplify the construction and increase the efficiency and serviceability of an instrument of this kind; and the invention consists in the construction, arrangement, and combination of parts, substantially as will be hereinafter described and claimed.

In the accompanying drawings, illustrating my invention, Figure 1 is a plan view of my improved dental plugger. Fig. 2 is a longitudinal section of the same. Fig. 3 is a transverse section on the line *x x* of Fig. 2 and shows the shape of the finger-loop. Fig. 4 is a plan view of the cam, showing the edge thereof. Fig. 5 is a detail side view of the cam and the mechanism connected thereto for operating it.

Like letters of reference designate corresponding parts throughout the different figures.

A denotes the elongated tubular case, which contains the plugger-rod B, whose outer end B′ is reduced properly to afford a point which may serve to impart blows during the usual operation of plugging.

The tubular case A may vary in size, as desired, and I am restricted to no particular length or diameter for the same. About midway of its length or at any other convenient point it is provided with a curved finger-loop or hook C, through which the index-finger of the operator will pass when the device is held in working position. At a suitable point with relation to the finger-loop the side wall of the case A is slotted or cut away at A′, so that when the device is held in operative position, with the operator's finger through the finger-loop, his thumb may rest in this cut-away portion, and thus be in readiness to control the motion of the hammer by means of the device to be hereinafter explained, which is arranged in said cut-away portion. The end of the case A is formed in a sort of T shape A^2 to give a part at right angles to the main direction of the case, wherewith the spring-hammer and certain parts of the mechanism of my improved dental plugger may be arranged.

The actuating-hammer for the plugging-rod consists of a flat spring D, which is securely fastened to the outer end of the part A^2 on one side of the point where the plugger-rod B projects through the tubular case, said spring being fastened in place by means of small rivets or screws *a a* or other desirable attaching means. One end of the spring D, immediately opposite the end of the plugger, carries a weight E. The other end of the spring, (designated D′,) beyond the point where said spring is fastened to the part A^2, is bent back upon the spring, as shown in the drawings, and provided with a set-screw *b*, which passes through it and bears upon the spring D, thus enabling the operator to regulate the tension of the spring and the force of its blow. It will thus be observed that the spring-hammer is adapted to strike the end of the plugger-rod, and as it carries the weight E the force of the blow will be sufficient to actuate said rod and cause it to perform the operation of plugging.

On the end of the case A opposite to the part A^2 is a removable screw-cap, *c*. The part of the plugger-rod B within this screw-cap is surrounded by a coiled spring *d*, which is tensioned between a collar *d′*, rigid on the rod, and a loose collar d^2 in the outer end of the cap. Thus it will be seen that this spring will act to return the plugger-rod to its former position after each blow upon the end thereof by the spring-hammer just described. The collar *d′* abuts against a bearing on the end of the case A where the screw-cap is attached.

My improved dental plugger is attached directly to the spring-driven shaft of a dental

engine. F denotes the end of said drive-shaft, which is attached firmly to the cam-spindle G, which has bearings at each end within a hollow thimble H, that is screwed into or otherwise fastened to the tubular case on the other side of the plugging-rod from where the spring-hammer is located. Outside the thimble said spindle G is provided with a milled head *e*. Inside the spindle it passes loosely through the center of the cam I, which preferably has the two inclines *i i*. The spindle G is, however, adapted to be connected to the cam for the purpose of rotating the latter by means of a clutch J, consisting of a short sleeve on the spindle G, one end of which is indented to enter corresponding indentations on the central portion of the cam, while the other end is slotted to receive pins on spindle G, while a spring enveloping the spindle is tensioned between said end of the clutch J and a collar on the spindle. This construction and arrangement of parts will be clearly observed from inspection of Fig. 5, and it will be obvious that when the spindle G rotates in a forward direction the cam I will be engaged, and thus correspondingly rotated; but when the spindle G rotates in a backward direction the cam will remain stationary, as the clutch will not engage it. The side of the thimble H nearest the spring-hammer is slotted to permit the entrance within the thimble of the end *g* of spring D. Said end *g* enters the thimble in such a manner as to lie directly above the cam. As the cam rotates, therefore, the spring-hammer will be lifted at intervals, and when released by the cam its tension will throw it with considerable force against the end of the plugger B, thus causing the plugging end B′ thereof to exert its function.

It often happens that when a device of this kind is used the operator desires to temporarily suspend the operation by plugging, although he will still retain the instrument in his hand. When for any reason, therefore, the dentist desires to stop the motion of the plugger while he still retains the instrument within his grasp, he can do so by means of the device which I have provided in connection with my improved dental plugger, and which consists of a strip of metal K, running lengthwise within the tubular case A parallel to the plugging-rod, one end of said piece K emerging from the case A, so as to be in contact with the spring-hammer D, while the other end emerges from the case A within the cut-away portion A′ and has an enlarged end *k* so formed as to be easily moved when the operator presses thereon, and having a shoulder which comes into contact with the case A, so that the end *k* will not enter the case, but will remain in position where it can be touched at any time. Thus when the operator wants to stop the action of the cam upon the spring-hammer all he needs to do is to press his thumb easily upon the projecting end *k* of strip K, which will result in removing the spring-hammer a sufficient distance from the cam to allow the latter to rotate without exerting any effect upon the hammer. In Fig. 1 I have shown the spring-hammer thus removed from the cam, while in Fig. 2 it is exhibited as being in contact with the cam.

The operation of my improved dental plugger will be obvious from the preceding description of the arrangement and function of the several parts.

It is seen that the motion of the spring drive-shaft, which connects with any suitable dental engine, will operate the cam, which in turn will act upon the spring-hammer. Each time the cam releases the hammer the latter will strike upon the plugger and the end B′ of the latter will impart a blow. The operator will hold the instrument in his grasp, as has already been suggested, with his forefinger passing through the loop C and his thumb resting within the cut-away portion A′, so as to be in readiness to move the device which controls the spring-hammer.

Many advantages will accrue in the use of my improved instrument. It will be seen that there is no friction to retard the steady and even motion of the hammer, so that it will give its blow accurately and firmly, and the plugging-instrument will receive the full force thereof. Further, the blow and the force of the blow of the hammer are under the perfect control of the operator while he is using the instrument. Other obvious advantages might be enumerated; but it is needless.

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

1. In a dental plugger, the combination, with the plugging-instrument, of a spring-hammer, the actuating-cam, and the stop device K, having end *k*, for stopping the hammer, substantially as described.

2. The combination of the casing A, cut away at A′, the plugging-instrument B, arranged therein, the spring-hammer attached to the case, the thimble H, likewise secured to the case, the spindle G, journaled in the thimble, the cam I, arranged within the case and adapted to act upon the spring-hammer, and clutching mechanism for connecting the cam and the spindle, substantially as described.

3. The combination, with the main casing, the plugging-instrument therein, and the cam for operating the spring-hammer, of said hammer, consisting of the spring D, secured at *a a* to the part A^2 of the case and carrying weight E, said spring D having the part *d′* curved back upon itself and carrying a set-screw *b*, for regulating the force of the blow of the hammer, substantially as described.

4. The combination of the case A, cut away at A′, plugging-instrument B within said case,

having point B′, the spring *d*, arranged within the cap *c*, which is secured on the end of the case, as specified, the spring-hammer and its set-screw *b*, the cam for operating the hammer, the actuating means for the cam-spindle, the clutching mechanism between the spindle and the cam, and a stop device for the hammer, all substantially as described.

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

ANDREW J. SAWYER.

Witnesses:
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ARTHUR N. DEARBORN.