

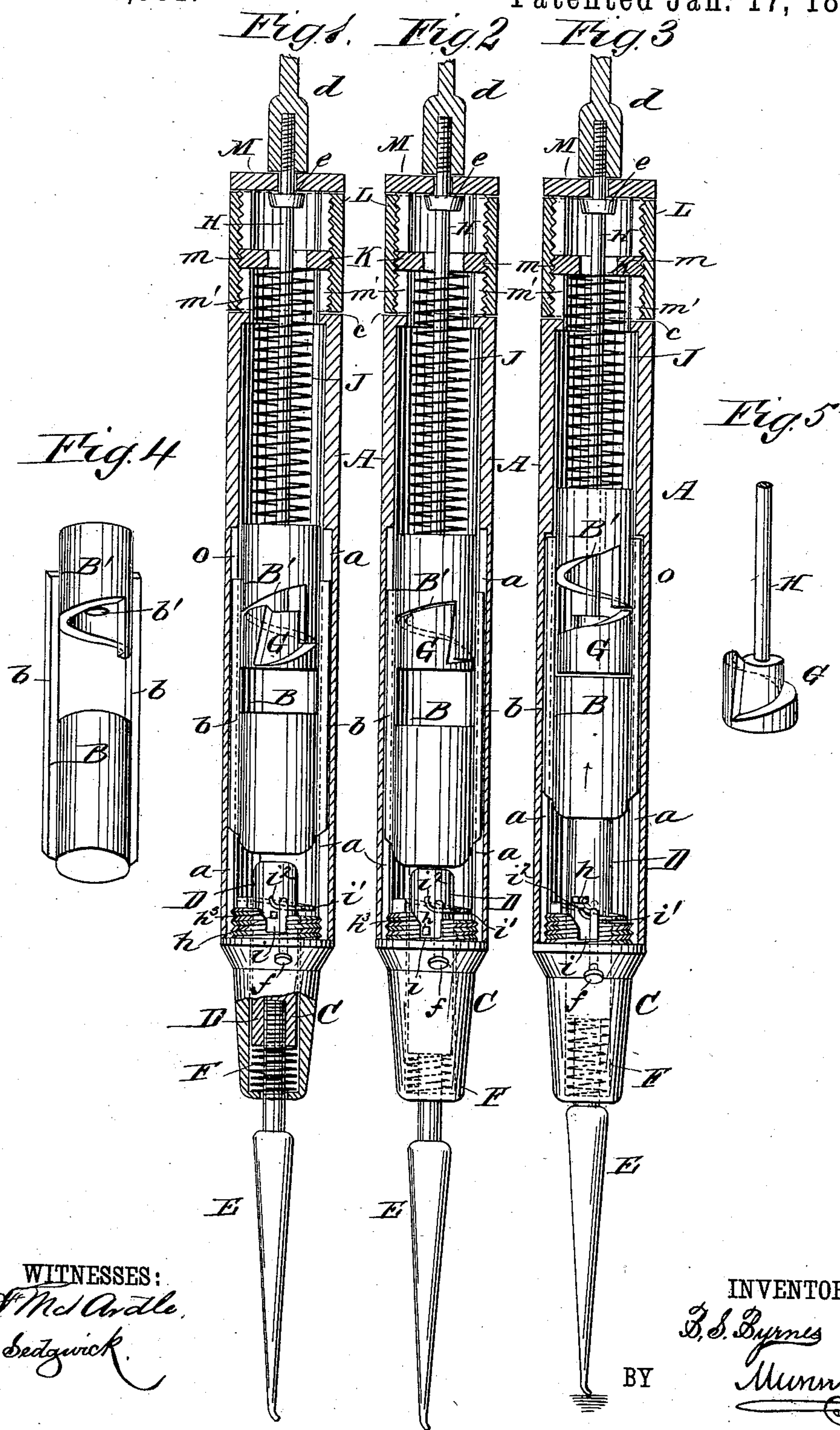
(Model.)

B. S. BYRNES.

DENTAL PLUGGER.

No. 376,581.

Patented Jan. 17, 1888.



UNITED STATES PATENT OFFICE.

BENIJAH S. BYRNES, OF MEMPHIS, TENNESSEE.

DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 376,531, dated January 17, 1888.

Application filed July 16, 1887. Serial No. 244,506. (Model.)

To all whom it may concern:

Be it known that I, BENIJAH S. BYRNES, of Memphis, in the county of Shelby and State of Tennessee, have invented a new and Improved Dental Plugger, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal sectional elevation of my new dental plugger, showing the hammer partially raised. Fig. 2 is a similar view showing the hammer in its lowermost position—the position it occupies at the time of delivering a blow. Fig. 3 is a longitudinal sectional elevation showing the plugger out of gear. Fig. 4 is a perspective view of the hammer removed from the main casing, and Fig. 5 is a perspective view of the rotating spindle and cam for lifting the hammer.

The invention will first be described in connection with the drawings, and then pointed out in the claims.

A represents the main casing, formed upon the inside with the grooves or ways *a a*, to receive the side ribs, *b b*, of the hammer B. The lower end of the casing A is closed by the screw-tip C, in which is held the shank D, into which the plugging or other instrument, E, is screwed, as shown clearly in Fig. 1. The shank D is held normally elevated in the tip C by the light coiled spring F, so that the upper end of the said shank will be in the range of the stroke of the hammer B, which stroke is produced by the cam B', (which is a part of the hammer,) the rotary cam G, spindle H, and coiled spring J, held in the casing A above the hammer. The cam B' is connected to the hammer proper, B, by the side flanges, *b*, and the said cam is formed with an aperture, *b'*, for the passage of the spindle H. The cam G is attached to the spindle in the space between the adjacent ends of the hammer B and the cam B', and the spindle H is adapted to be revolved by any suitable motor attached to its outer end by a tip, *d*, in any well-known manner. The revolution of the spindle H and cam G causes the lifting of the hammer B and cam B' until the toes of the cams pass each other. This lifting motion compresses the spring J,

and when the toe of the rotary cam passes the toe of the cam G the spring J reacts and forces the hammer B and cam B' downward, causing the hammer to deliver a blow upon the shank D. This blow thrusts the shank D and instrument E forward against the tension of the light spring F, which reacts and lifts the shank and instrument ready for another blow. The shank D is free to move longitudinally in the tip C to an unlimited extent, or until it lifts the hammer B, so that any overpressure upon the instrument E will lift the shank nearer the hammer B, and thus diminish the force of the blow of the hammer. In this manner all danger of injury to the patient is obviated, as the free sliding of the shank causes a diminution in the power of the blows in a direct ratio to the pressure of the instrument upon the teeth.

By a considerable pressure upon the point of the instrument D the whole device may be thrown out of gear, so that the point of the instrument may be conveniently used for placing pieces of gold without stopping the revolution of the spindle H and cam B'. This is accomplished by the shank lifting the hammer B and cam B', so that the latter is out of contact with the cam G. The shank is held from rotating in the tip C by a stud or pin, *h*, which enters an open slot or notch, *i*, in the tip C, and I provide a small volute spring, *i'*, attached to the inner end of the tip, the free end *i''* of which stands partially over the stud or pin *h*, so that the shank D will not drop back in the tip of its own accord in case the plugger should be inverted. The end *i''* is curved slightly upward, and when depressed by small rod *f* (the shank being elevated) presses the stud *h* to the right, holding it on top of the incline *h*, thus holding the shank in elevated position, so that no blows will be delivered upon the shank. By means of the pin *f* the free end of the spring *i'* will be elevated and moved from the pin *h*, which will permit the shank to drop, and thus throw the plugger into gear.

The tension of the spring J may be increased or diminished to vary the force of the blows struck by the hammer by backward and forward movement of the plate K, placed above the spring at the upper end of the casing A, which plate may be adjusted by the internally-screw-threaded sleeve L, fitted upon the cas-

ing A, as shown clearly in the drawings. The adjustable plate K is formed with side screw-threaded projections, *m*, which reach through slots *m'* in the casing A, to engage with the internal screw-threads of the sleeve L. The case A is offset at *c* to receive the sleeve L, and said sleeve is held in place by the cap or top plate, M, in which the outer end of the spindle H takes its bearings, the same being prevented from longitudinal movement by the collar *e* and the top *d*.

By constructing the plugger as described the same is cheap and durable, may be instantly thrown out and in gear without stopping the revolution of the spindle, and the force of the blows or power of the instrument cannot be increased by pressure, which is liable with the ordinary plugger to injure the tooth operated upon or unduly hurt the patient.

Having thus described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. The shank D and pin *h* thereof and the tip C and slot *i*, for receiving the said pin *h*, in combination with the main casing, hammer B, cam B', intermediate cam, G, spindle H, spring J, and spring *i'*, placed in the main casing, with its free end in line with the slot *i*, substantially as and for the purposes described.

2. The main casing A, hammer B, cam B', intermediate cam, G, spindle H, spring J, shank D, and tip C, having slot *i*, in combination with the spring *i'*, terminating over the slot *i*, and the pin *f*, attached to the spring, substantially as and for the purposes set forth.

BENJAH S. BYRNES.

Witnesses:

J. M. TREZEVANT,
W. A. CULLIER.