

(No Model.)

R. B. KICE.
DENTAL PLUGGER.

No. 342,107.

Patented May 18, 1886.

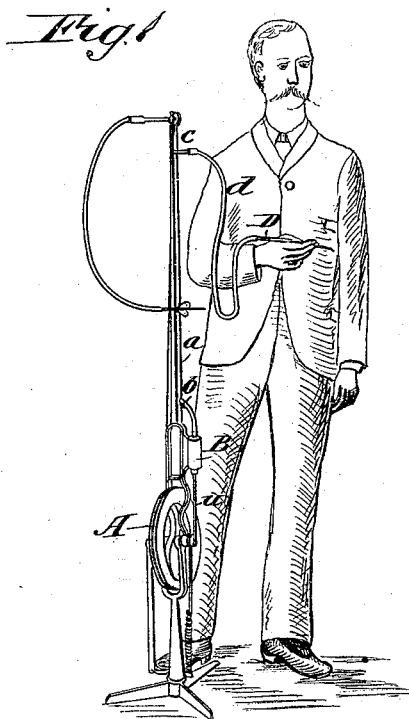


Fig. 2.

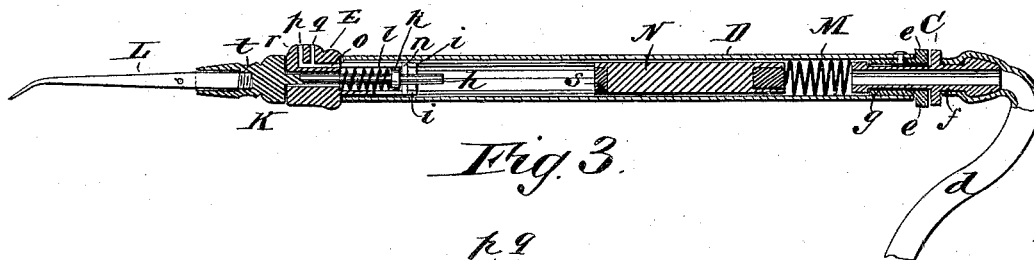


Fig. 3.

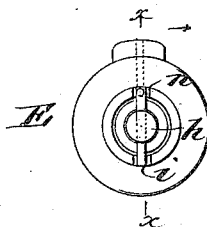
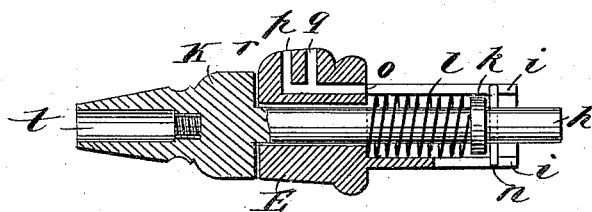


Fig. 4

WITNESSES:

*H Mc Andle
to Sedgwick*

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UNITED STATES PATENT OFFICE.

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DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 342,107, dated May 18, 1886.

Application filed November 3, 1885. Serial No. 181,758. (No model.)

To all whom it may concern:

Be it known that I, ROBERT B. KICE, of Richmond, in the county of Ray and State of Missouri, have invented certain new and useful Improvements in Dental Pluggers and Mechanism for Operating the Same, of which the following is a full, clear, and exact description.

My invention relates to the construction of a dental plugger in which the force of the blow will be entirely under the control of the operator, and which may be operated by a simple attachment fixed to the ordinary form of dental engine.

My invention consists of the construction and arrangement of parts, as will be hereinafter fully described, and particularly pointed out in the claims.

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 perspective view of a dental engine with my plugger attached thereto. Fig. 2 is a longitudinal sectional view of the plugger. Fig. 3 is an enlarged sectional view of the tool-holder and cylinder-cap, and Fig. 4 is an end view of the same.

Referring now to the general construction illustrated in the drawings, A represents a dental engine of ordinary form, having hollow standard *a*.

Secured to one side of the standard *a* is an air-pump, B, which connects by means of a flexible tube with a small tube, *b*, which is fitted into the side of the hollow standard *a*. Projecting from the upper end of the hollow standard *a* there is a second tube, *c*, to which there is fixed a flexible air-tight tube, *d*, and upon the end of this flexible tube I secure my plugger by means of a swivel-joint, such as is shown at C.

The plugger proper consists of a cylindrical handle, D, to one end of which there is secured a collar, *e*, forming an inner and outer shoulder. The nose-piece *f*, to which the tube *d* is fixed, is formed with a contracted portion, *g*, which fits within the bore of the collar *e*, the nose-piece being formed with shoulders to prevent all lateral displacement. To the other end of the handle D there is secured, by means

of a set-screw or any other convenient device, a slotted cap, E, formed with an inwardly-projecting flange that is longitudinally slotted at *i*. This cap E is bored out centrally, and within the bore so formed the shank *h* of the tool-holder K is fitted. This shank *h* is formed with a collar, *k*, which acts as a stop for a spiral spring, *l*, that is coiled about the shank and abuts against the inner face of the cap and said collar, the action of the spring being to hold the tool-holder K in the position shown in Figs. 2 and 3. Just back of the collar *k* there is a pin, *n*, which passes through the shank *h* and projects slightly within the slot *i*. The air-duct *o* is formed in the cap E, and branches out as it advances into two ducts, *p* and *q*, which run at about right angles to *o*, and project through the walls of the cap, emerging from a lug-like projection, *r*. A mallet or hammer, N, is fitted closely within the tube D, the forward end of the hammer being provided with a rubber cushion, *s*, and the rear end loaded with lead or other heavy material. A spiral spring, M, is placed in the tube D back of the hammer N, and arranged so as to prevent the hammer from striking against the inwardly-projecting end of the nose-piece *f*. The tool L is threaded to engage with a partially-threaded socket, *t*, formed in the tool-holder K. From this construction it will readily be understood that a set of tools may be used interchangeably with the same plugger.

The operation of the apparatus is as follows: The dental engine A is started, thereby operating the air-pump B through the medium of the crank-shaft of the engine and the connecting-rod *u*. This produces a pulsatory current of air through the standard *a* and flexible tube *d*, the current being carried within the handle D of my plugger, so as to strike against the end of the mallet N and force it against the shank *h*, thereby compressing the spring *l* and forcing out the tool-holder, this being done upon the upstroke of the piston of the air-pump. On the downstroke of the said piston there is a suction-current in the tubes D *d* *a*, and the mallet or hammer is drawn back to the position shown in Fig. 2, the operation being repeated at each revolution of the crank-shaft. The force of the blow upon

the shank *h* is regulated by the amount of air allowed to pass out through the ducts *p* and *q*, which are under the finger of the operator, who has the machine in perfect control, it being understood that the force of the blow is diminished when the ducts are nearly closed and increased when more air is allowed to escape. By forming the cap *E* with the lug-like projection *r* the operator is enabled to find the ducts by the sense of touch.

I am aware that a dental-engine standard has been provided with an air-pump operated from the drive-shaft of the engine, and provided with a flexible tube connected with a pneumatic plugger, the standard being provided at its upper end with an arm or rest for supporting the flexible tube and plugger, and I do not claim the same as of my invention; nor do I claim a cap formed with a series of holes extending entirely around it to allow the air to pass out of the cylinder in the forward stroke of the hammer.

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

1. The combination, with a dental engine having a hollow standard, *a*, and an air-pump, *B*, connected with the interior of the said standard at its lower end, of a plugger connected by a flexible tube, *d*, to the hollow standard at its upper end, substantially as set forth.

2. In a pneumatic dental plugger, the cap *E*, having a longitudinal bore, an air-duct, *o*, parallel therewith, and two transverse ducts, *p* *q*, adjacent to each other, and leading from the outer face of the cap to the air-duct *o*, whereby the operator may control the ducts *p* *q* with one-finger, as and for the purpose set forth.

ROBERT B. KICE.

Witnesses:

LAVOISE N. GUILD,
GEORGE A. STONE.