A. WILLIAMS.

Dental-Plugger.

No. 164,244. Patented June 8, 1875.

FIG. 3

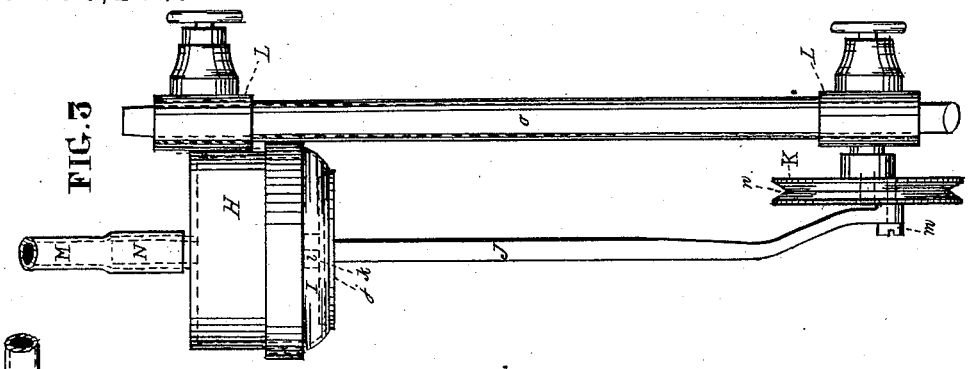


FIG. 1

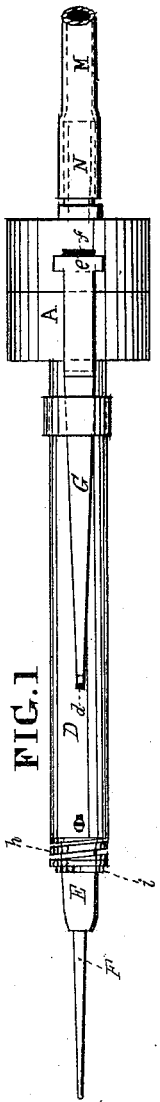


FIG. 2

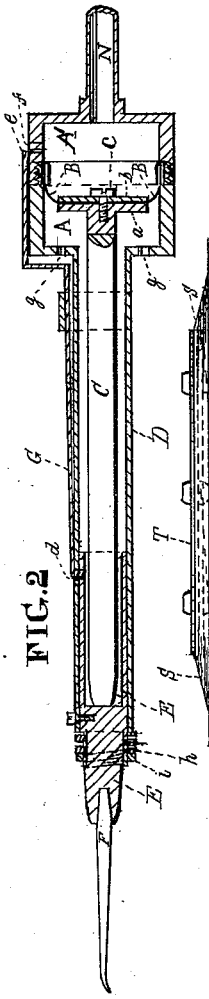


FIG. 5

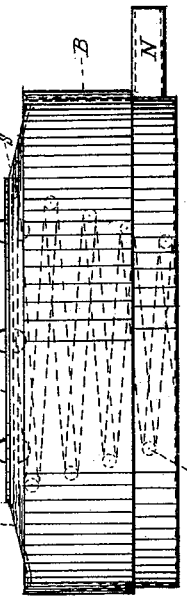
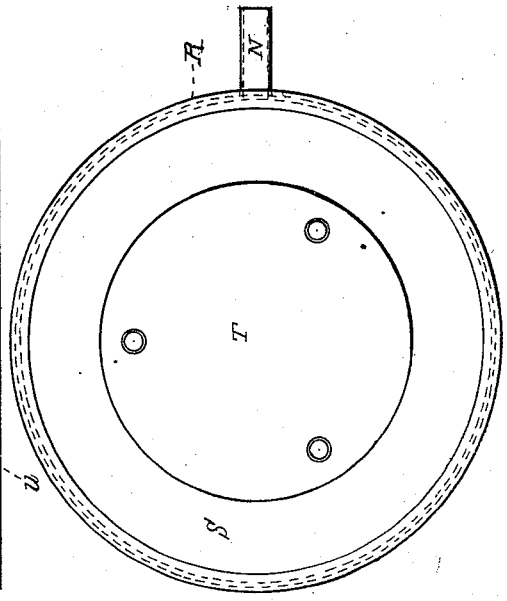


FIG. 4



Witnesses

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UNITED STATES PATENT OFFICE.

ALFRED WILLIAMS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF HIS RIGHT TO GIDEON SIBLEY, OF SAME PLACE.

IMPROVEMENT IN DENTAL PLUGGERS.

Specification forming part of Letters Patent No. **164,244**, dated June 8, 1875; application filed April 14, 1875.

To all whom it may concern:

Be it known that I, ALFRED WILLIAMS, of the city and county of Philadelphia, in the State of Pennsylvania, have invented an Automatic Tooth-Plugger, and devices for operating the same, of which the following is a specification:

My invention consists of an automatic tooth-plugger and motors or conveyers of motive power, substantially as hereinafter described.

In the accompanying drawings, Figure 1 is a side view of the plugging-instrument. Fig. 2 is a longitudinal section at the line *x x* of Fig. 1. Fig. 3 is a face view of a device to be used with a dental burring-engine or other motor to communicate power to the plugging-instrument. Fig. 4 is a plan view of a device for communicating power to the plugging-instrument when used independently of the burring-engine. Fig. 5 is an edge view of the same.

Like letters of reference in all the figures indicate the same parts.

In Figs. 1 and 2, A′ is a chamber, which is provided with a flexible head, B, secured to hammer C, between the flange *a* and disk *b*, by means of the screw *c*, as shown in Fig. 2. The hammer C has a free movement in the case or hollow stem D and the slide or tool-holder E. The latter also has a reciprocating movement in said stem D to give a free movement, when struck by the hammer C, for driving the point or tool F against the filling to be condensed. G is a slide, whose small end is turned so as to pass through the slot *d* of case or hollow stem D, and connected with the slide or tool holder E. The other end of said slide G is provided with a shoe, *e*, which fits the outer surface of the chamber A, so as to close the opening *f* when the point or tool F is pressed against the filling. The said opening being closed, the strokes of the hammer are given as follows: A vacuum is formed in chamber A′ by any suitable device, (two of such devices are hereinafter described,) which causes the atmospheric pressure upon the outer side of the head B to have access to the same through the openings *g*, and thereby force the head and hammer C (which is connected therewith) back.

If desired, the plate in which are the openings *g* may be omitted in the formation of the chamber A, whereby the atmospheric pressure will act directly upon the flexible head B.

The chamber A′ is then filled with its former contents, whereby the hammer is driven against the slide or tool-holder E, the concussion of which drives the point or tool F against the filling. When the pressure is relieved from said tool the spiral spring *h*, which is situated between the outer end of the stem D and the nut *i* on the tool-holder E, carries the slide E forward, and with it the slide G, drawing the shoe *e* off the opening *f*—thereby preventing the formation of a vacuum in the chamber—to prevent the hammer striking when not in actual use.

Fig. 3 represents one of the various devices by which the vacuum in chamber A′, Figs. 1 and 2, is formed and refilled.

H is a chamber, provided with a flexible head, I, secured to connecting-rod J between the flange *j* and disk *k*, and secured by means of the screw *l*. The said head I has a reciprocating motion back and forth in the chamber H by means of said connecting-rod J, in combination with the pulley K, having a crank-pin, *m*. The pulley has a groove, *n*, in its periphery, for a belt to connect with the fly-wheel of a burring-engine. L L are tubes, which are made to fit the upright or standard *o* of the burring-engine, and secured thereon by means of set-screws.

When the device just described is used as a motor it is connected with the plugger by means of the flexible tube M, attached to the short tubes N N; or, instead of said flexible tube, a jointed tube will answer the purpose. The flexible head I, being drawn down or outward, forms a vacuum, causing the contents of chamber A′, Figs. 1 and 2, to rush into the chamber H, whereby a vacuum is formed in chamber A′, as before described, the upward or inward motion causing it to rush back again and fill said chamber A′, producing the blow above described.

Another of the many devices for creating a vacuum in chamber A′ and filling the same is shown in Figs. 4 and 5, in which R is a chamber, provided with a flexible head, S, to which is riveted the disk T. U is a spiral spring.

When this device is used it is connected with the plugger by means of the flexible tube M or a jointed tube attached to short tubes N. The spiral spring U raises or presses the flexible head S upward or outward, whereby a vacuum is formed in chamber A', producing the same effect as described in relation to Fig. 3. The head is then pressed downward or inward by the foot or hand, whereby the chamber A' is filled with its former contents, as described in relation to Fig. 3.

I claim as my invention—

1. The flexible head B, in combination with the chamber A' and hammer C, reciprocated partly or wholly by the formation of a vacuum on either side, or on both alternately, as a device for producing blows in a dental plugger.

2. The slide G, having a shoe, *e*, in combination with the tool-holder E and opening *f* of chamber A', substantially as and for the purpose set forth.

3. The flexible head I, in combination with the chamber H, as a conveyer of motive power to a dental plugger, substantially as described, or by any other suitable means.

ALFRED WILLIAMS.

Witnesses:

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