R. B. DONALDSON.

DENTAL PLUGGER.

No. 185,085. Patented Dec. 5, 1876.

Fig 1.

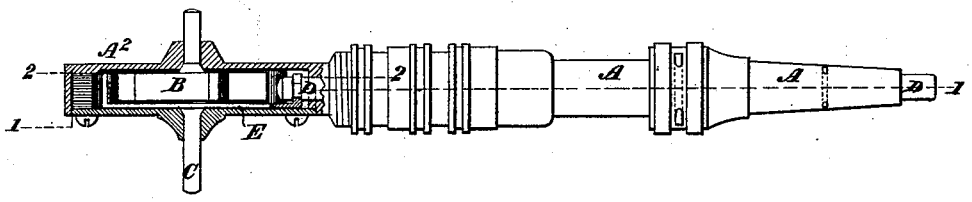

Fig 2.

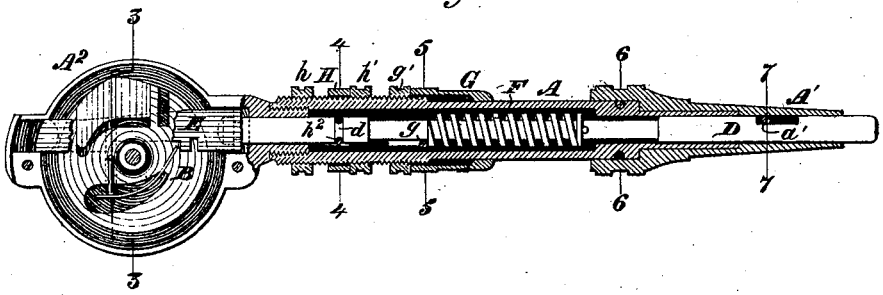

Fig 3.

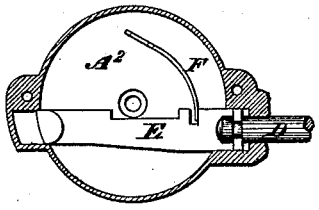

Fig 4.

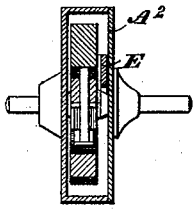

Fig 5

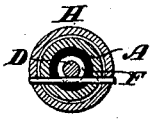

Fig 6

Fig 7

Fig 8.

WITNESSES

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IMPROVEMENT IN DENTAL PLUGGERS.

Specification forming part of Letters Patent No. **185,085**, dated December 5, 1876; application filed October 24, 1876.

To all whom it may concern:

Be it known that I, ROBERT B. DONALDSON, of Washington city, in the District of Columbia, have invented certain new and useful Improvements in Dental Pluggers, of which the following is a specification:

My invention relates to an automatic tooth-plugging instrument of that class adapted for operation in connection with a dental engine, and constitutes an improvement upon the instrument shown in Letters Patent of the United States granted to me March 30, 1875, as No. 161,393.

In my said patent a series of positive blows in rapid succession is given to the tool in a forward direction, by which means front, side, and under cavities may be successfully plugged.

The object of my present invention is to impart a series of positive back-action blows in rapid succession to the operating-tool, whereby rear cavities of teeth may be automatically, successfully, and rapidly plugged.

The subject-matter claimed hereinafter specifically will be designated.

In the accompanying drawings, which illustrate the best way now known to me of embodying my invention, Figure 1 is a plan or top view, partly in section; Fig. 2, a longitudinal central section on the line 1 1 of Fig. 1; Fig. 3, a vertical longitudinal section on the line 2 2 of Fig. 1; Fig. 4, a vertical cross-section on the line 3 3 of Fig. 2; Figs. 5, 6, 7, and 8 are cross-sections of the instruments, respectively, on the lines 4, 5, 6, and 7 of Fig. 2.

The cylindrical casing A of the instrument carries at its forward end a turning "nose" or tool-guide, A^1, and at its rear end a flat cylindrical portion, A^2, in which is mounted a revolving hammer, B, to one of the journal of which is attached a flexible driving-shaft, C, carrying a suitable shank to engage with the "chuck" or tool-holder of a dental engine in a well-known way. A plunger or shaft, D, provided at its forward end with a suitable tool-socket, reciprocates in suitable bearings in the casing.

The construction of the above-mentioned parts is similar to that shown in my patent aforesaid. The blows of the hammer, however, are not struck directly upon the head or end of the plunger to force it forward, as in that patent.

Within the enlargement of the casing, and enveloping the hammer, is an angular bar or retracting link, E, one end of which engages with the upper end of the plunger, while its other end, which works in the recess *a* of the casing, is struck at every revolution of the hammer by its cam portion, and thrown suddenly back, carrying with it the plunger and the operating-tool carried thereby, which is thus given a back action.

The plunger, after each blow, is returned to its normal position by the tension of a spring, F, carrying with it the retracting bar, which may also have a spring to assist its movement in readiness to receive the next blow of the hammer. The rapidity of blows given to the tool will, of course, be regulated by the operator.

To regulate the force of blows imparted to the tool, the tension of the spring F may be adjusted to offer more or less resistance to the retraction of the plunger, by means of a sliding sleeve, G, a tangential pin, *g*, of which passes through suitable slots in the casing, and bears against the end of the spring, the sleeve being controlled in its movement by a thumb-ring, *g'*, working on screw-threads formed upon the casing.

To regulate the "throw" or length of stroke given to the plunger, I employ a sliding sleeve, H, controlled by thumb-rings *h* h^1 on the screw-threaded portion of the casing, a tangential pin, h^2, of which passes through suitable slots in the casing and engages with an annular groove, *d*, in the plunger.

To enable the operating-tool to be turned to conform to the movements of the operator's hand in manipulating the instrument, I connect the nose or tool-guide A^1, by a tangential pin, *a'*, with a recessed portion of the plunger.

I thus obtain, by my invention, a positive and simple back-action plugger, which is readily adjusted to meet the varying conditions under which it is required to work.

I claim as of my own invention—

1. The combination, substantially as hereinbefore set forth, of the reciprocating plunger,

the rotating hammer, and the bar or link extending across the face of the hammer and acted upon directly by it.

2. The back-action dental plugger hereinbefore described, consisting of the sectional swiveling casing, the reciprocating plunger, its retracting spring, the rotating hammer, and the angular bar or link, acted upon directly by the hammer.

In testimony whereof I have hereunto subscribed my name.

ROBERT B. DONALDSON.

Witnesses:
DELOZIN DAVIDSON,
E. C. DAVIDSON.