

G. F. GREEN.

ELECTRO MAGNETIC DENTAL PLUGGER.

No. 171,121.

Patented Dec. 14, 1875.

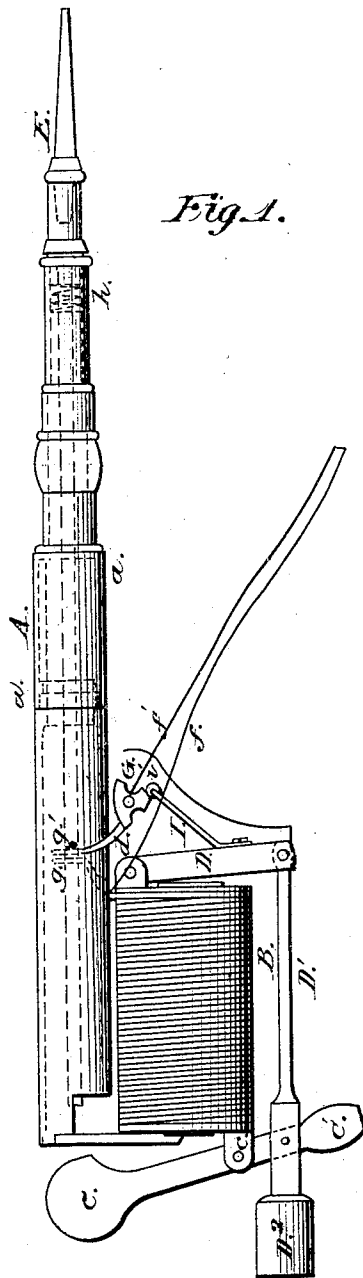


Fig. 1.

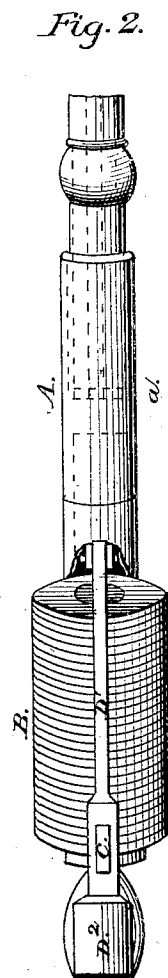


Fig. 2.

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by his atty
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UNITED STATES PATENT OFFICE.

GEORGE F. GREEN, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO SAMUEL S. WHITE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN ELECTRO-MAGNETIC DENTAL PLUGGERS.

Specification forming part of Letters Patent No. **171,121**, dated December 14, 1875; application filed August 5, 1873.

CASE B.

To all whom it may concern:

Be it known that I, GEORGE F. GREEN, of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain Improvements in Electric Dental Mallet Pluggers, of which the following is a specification:

The object of the first part of my invention is to secure a motor of uniform power; to which end my invention consists in combining a dental mallet-plugger and a fixed electro-magnet, mounted directly upon the instrument itself.

The object of the next part of my invention is to deliver a series of distinct hammer-strokes upon the plugger, instead of imparting a rapid fluttering motion thereto; to which end my invention consists in combining, in a dental mallet-plugger, an electro magnet, a vibrating mallet, and a reciprocating plugging-tool.

The object of the next part of my invention is so to counterbalance the hammer as to obtain the full force of the blow, no matter in what position the tool may be held; to which end my invention consists in combining an electro-magnet, a vibrating hammer, and a counter-balance.

The object of the next part of my invention is automatically to open and close the circuit at every stroke of the hammer; to which end the invention consists in connecting an automatic circuit-breaker with some of the vibrating parts of the hammer mechanism.

The object of the next part of my invention is to enable the operator readily to stop or start the instrument; and the invention consists in combining an electro-magnetic dental mallet-plugger and a circuit opening and closing device, mounted upon the instrument itself, and operated simply by pressure against its point.

In order to vibrate the mallet a circuit-breaker is necessary. This I prefer to construct by connecting one of the battery-wires *f* directly to the coil of the magnet, while the other is connected to a triangular insulated rocking block, *G*. A pad, *g*, connected with the coil of the magnet, encircles the shank of

the plugging-tool *E*. A similar pad, *g'*, is connected with the rocking block *G*, and may be pressed against the pad *g* by a pin or spur on the shank of the plugger. Ordinarily the pads remain far enough apart to break the circuit; but when the plugger-point is pressed against the tooth the pads are pressed together and the circuit is completed. This is a very important feature, as it places the instrument completely under the control of the operator without the use of independent stopping and starting mechanism. When the parts are pressed together the circuit is closed, the magnet acts upon the mallet, and a blow is given to the plugging-tool. The circuit is broken and the hammer released by means of a roller, *i*, on an arm, *I*, mounted on one of the armatures, or otherwise connected with the mallet. As the mallet strikes this roller descends under the rocking block and tips it, thus breaking the circuit between the wire *f* and the upper pad *g'*, and releases the mallet. The dropping of the mallet causes the roller to ride upon the upper side of the rocking block, and thus again to close the circuit.

In the accompanying drawings, which show a convenient arrangement of mechanism for carrying out the objects of my invention, Figure 1 represents a side elevation, and Fig. 2 a front view, of my improved instrument, the casing being broken away in places to show the interior.

The case or handle *A* of the instrument is made in two sections, connected by means of a swivel-joint, *a*, which permits one section to be turned freely in the other one, and the plugging-tool to be thus turned without changing the position of the instrument. An electro-magnet, *B*, has mounted on, or secured to, its casing a mallet, *C*, which swings freely on a fulcrum-pin, *c*, and is, by preference, provided with a counter-balance, *C'*, to enable it to be worked with equal freedom in any position. I also prefer, in order to gain increased power, to connect the armature which carries the mallet with another armature, *D*, at the opposite end of the electro-

magnet. This armature vibrates on a pivot, *d*, and is connected by a link, *D*¹, with the mallet-armature *C*. A counter-balance, *D*², may be used on this link, if preferred. The mallet acts upon a plugging-tool, *E*, reciprocating endwise in the case, being driven in one direction by the mallet, and in the other by a spring, *h*, as usual, and as shown by dotted lines in Fig. 1. These movements are repeated at every stroke of the mallet.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of an electro-magnet and a mallet-plugger mounted directly thereon.

2. The combination, in one instrument, substantially as set forth, of an electro-magnet, a mallet mounted thereon and vibrated thereby, and a reciprocating plugging-tool.

3. The combination, substantially as set forth, of a plugging-tool, an electro-magnet, a vibrating mallet, and a counter-balance, to insure malleting with uniform force in any position.

4. The combination, substantially as set forth, of a plugging-tool, a mallet, an electro-magnet, and an automatic circuit-breaker actuated by the mallet.

5. The combination, substantially as set forth, of an electro-magnetic dental plugger and circuit-breaking mechanism, actuated simply by pressure upon the point of the plugging-tool.

6. The combination, substantially as hereinbefore set forth, of a rotating case-section and the electro-magnetic dental plugger, for the purpose described.

7. The combination of the electro-magnet and the two armatures *C D*, substantially as described.

In testimony whereof I have hereunto subscribed my name.

GEORGE F. GREEN.

Witnesses:

LEVI TEAL,

WM. E. MORGAN.