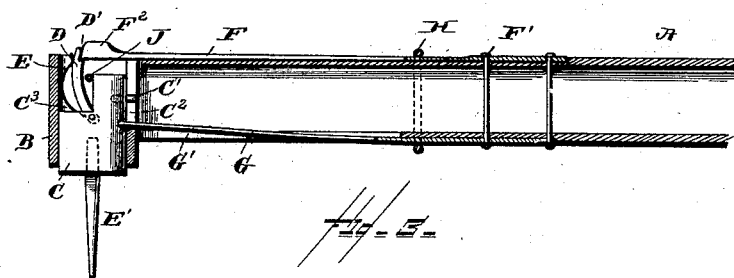
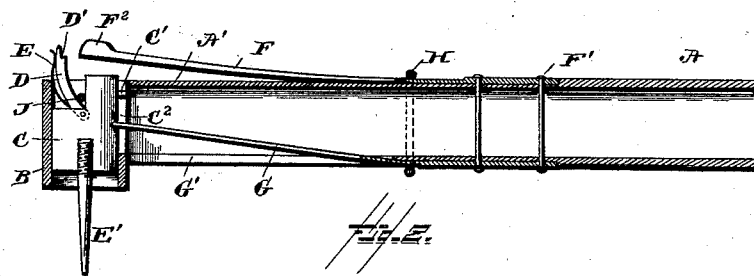
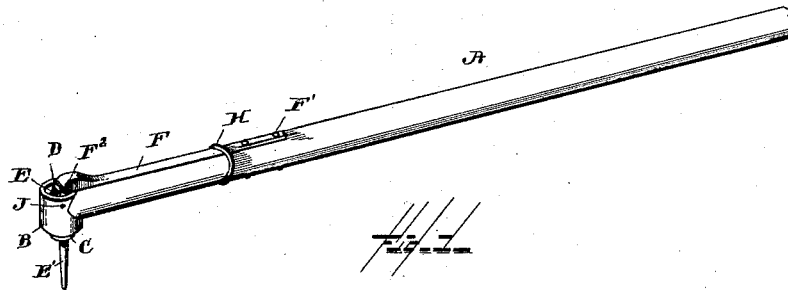


(No Model.)

H. C. BALLARD.
AUTOMATIC DENTAL PLUGGER.

No. 423,205.

Patented Mar. 11, 1890.



Witnesses
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UNITED STATES PATENT OFFICE.

HENRY CLIFF BALLARD, OF MILWAUKEE, WISCONSIN.

AUTOMATIC DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 423,205, dated March 11, 1890.

Application filed December 10, 1889. Serial No. 333,173. (No model.)

To all whom it may concern:

Be it known that I, HENRY CLIFF BALLARD, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Automatic Dental Pluggers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to certain new and useful improvements in automatic dental pluggers; and it has for its object to generally simplify the construction and to render more efficient in operation this class of dentists' appliances.

The more immediate object of the present invention is to improve upon the construction of that class of dental pluggers in which the plugger-point of the instrument moves in a direction at right angles to the handle, and hence is specially adapted for use in consolidating gold in the grooves and against the walls of dental cavities in the posterior teeth, the principle which is involved in the operation of the several parts being entirely different from that which is involved in the operation of the so-called "back-action" dental pluggers which have heretofore been constructed.

To the above ends and to such others as the invention may pertain the same consists in the peculiar construction and in the novel combination, arrangement, and adaptation of parts, all as more fully hereinafter described, shown in the accompanying drawings, and then specifically defined in the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, like letters of reference indicating like parts throughout the several views, and in which drawings—

Figure 1 is a perspective view of a dental plugger constructed in accordance with my invention. Fig. 2 is a central longitudinal

section of the same in which the parts are shown as in the position which they will occupy when in readiness to impart a blow. Fig. 3 is a similar view in which the parts are shown in the position occupied when the blow is imparted.

Reference now being had to the details of the drawings, letter A represents the handle of the instrument, which is preferably made of a hollow tube of metal.

B is a short metallic tube, which is soldered or otherwise suitably attached to the end of the handle and extends at right angles thereto, as shown, the upper end of the tube being flush with the flattened portion A' upon the upper face of the handle.

C is a block of metal fitted within the interior of the tube B and adapted to be moved vertically therein, the interior of the tube being provided with a hardened-steel lining in order to prevent in a great measure the wearing of the parts, and in order also to insure a more perfect fit. As the block C is adapted to receive and carry the plugger-point, I designate it the "plugger-socket."

C' is a metallic pin, one end of which is secured within a suitable opening formed in the plugger-socket, while its free end extends horizontally through a vertical slot C², formed in the rear face of the tube B, and this pin serves as a guide for the plugger-socket in its vertical movements, and at the same time prevents possible rotary movement of the same within the tube, as will be readily understood.

The upper portion of the plugger-socket C, upon the side opposite to that provided with the pin C', is cut away to form a substantially right-angled recess C³, and within the lower portion of this recess is pivoted the lower end of the latch D, which latch is curved or formed upon the arc of a circle and is provided at its upper end with a notch D', for a purpose which will presently appear.

E is a flat curved spring, the lower end of which is secured within a suitable recess formed in the bottom of the recess C³. The central portion of the spring bears against the inner face of the tube B, while its free end bears against the outer face of the latch D.

The lower face of the plugger-socket is pro-

vided with a suitable screw-threaded opening, within which is secured the plugger-point E'.

F is the hammer-spring, which is secured to the upper face of the handle, preferably within a shallow groove formed therein for its reception, so that the upper face of the body of the spring will be substantially flush with or slightly above the upper face of the handle. This spring is secured to the handle by means of suitable bolts F', passed through the spring and handle, and its free end, which extends over the open upper end of the tube B, is thickened or weighted, as shown at F², while upon the lower face of the handle, directly beneath the hammer-spring F, is secured, by the same bolts which hold said spring in place, a spring G, the body of which is substantially flush with the lower face of the handle, while the free end of the spring is inclined inwardly through a slot G' in the handle and its extreme end is secured to the plugger-socket. A metallic ring H, passed over the handle at the point at which the springs are secured, serves as a means of regulating the tension of the hammer-spring, as will be understood.

J is a transverse pin passed through the tube B within the recess C³ and the inner face of the latch D.

In operation the plugger-point is placed upon the filling within the tooth, and by forcing the handle of the instrument downward the plugger-socket C is forced upward until the curved inner face of the latch comes in contact with the cross-pin J, forcing the catch at the upper end of the latch out of engagement with the hammer-spring, which at once descends and imparts a blow upon the top of the plugger-socket, and the blow is thus imparted to the filling that is being operated upon. By releasing the downward pressure upon the handle the plugger-socket is forced down again by the action of the spring G, and the catch is forced into place by the action of the spring E, and the instrument is again in position for imparting another blow by pressing downward upon the operating-handle.

In order to guard against wear, the lower surface of the hammer-spring is preferably faced with steel.

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

1. The combination, with the handle, the tube at one end thereof and at right angles thereto, and the plugger-socket movable in

said tube, of the spring extending lengthwise of the handle and connecting the handle and plugger-socket to actuate said socket, and a spring-hammer on the handle with its free end adapted to engage the plugger-socket to impart a blow thereto, as set forth.

2. The combination, with the handle and the guide-tube secured to one end thereof at right angles thereto, of the plugger-socket movable in said tube, the spring on the handle and connecting the same with the plugger-socket and adapted to actuate the same, the spring-hammer on the handle and adapted to impart a blow to said plugger-socket, and a latch carried by the plugger-socket and adapted to automatically lock and release the said hammer by an oscillatory movement of the handle, substantially as described.

3. The combination, with the handle and the guide-tube secured to one end thereof, at right angles thereto, of the plugger-socket movable in said tube, the spring on the handle and connecting the same with the plugger-socket to actuate said socket, and a spring-hammer on the handle, with its free end adapted to impart a blow to the said plugger-socket, and a pivoted latch carried by the plugger-socket and adapted to automatically lock and release the said hammer by an oscillatory movement of the handle, and a spring acting on said latch, substantially as shown and described.

4. The herein-described automatic right-angled dental plugger, the same comprising in combination a handle, a tube secured to one end of the handle at right angles thereto, a plugger-socket within the tube, a spring connecting the handle and socket and adapted to actuate the socket, a spring-hammer secured to the handle and adapted to impart a blow upon the upper face of the plugger-socket, a latch secured to the socket and provided at its upper end with a catch to engage and lock the hammer-spring, and a spring attached to the socket and adapted to actuate the latch and cross-pin moving with the plugger-socket through a slot in the tube for releasing the catch by the movement of the operating-handle, substantially as shown and described, and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY CLIFF BALLARD.

Witnesses:

PAUL NYE,

HENRY G. BECKER.