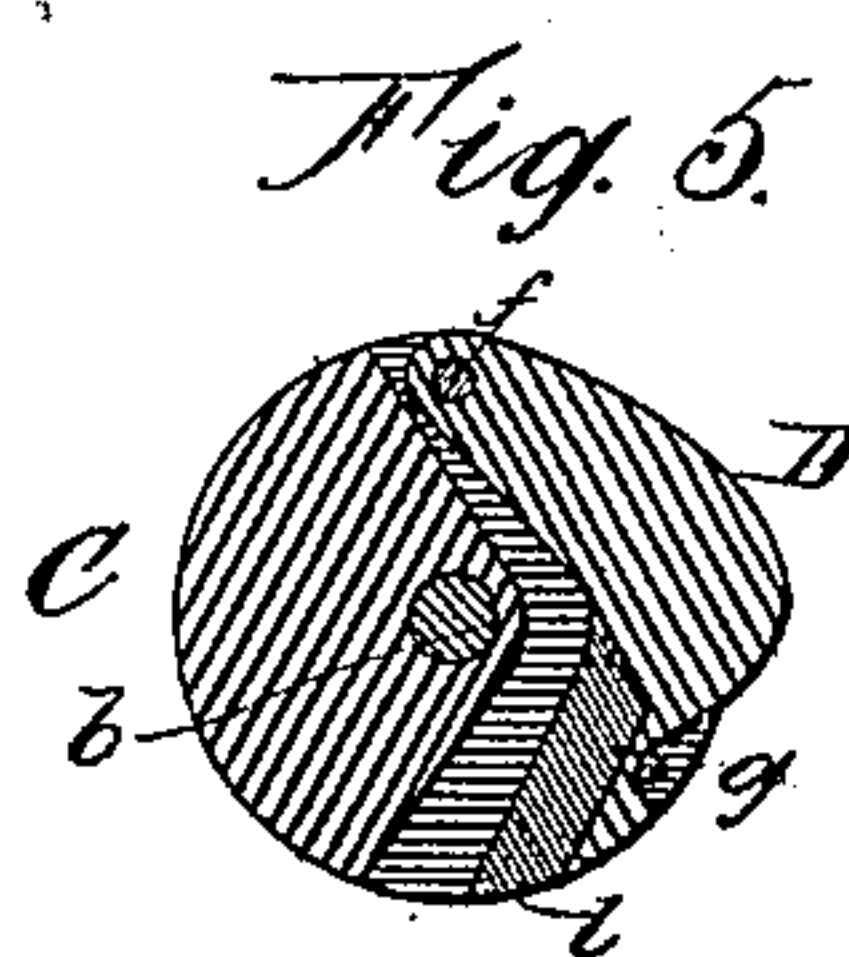
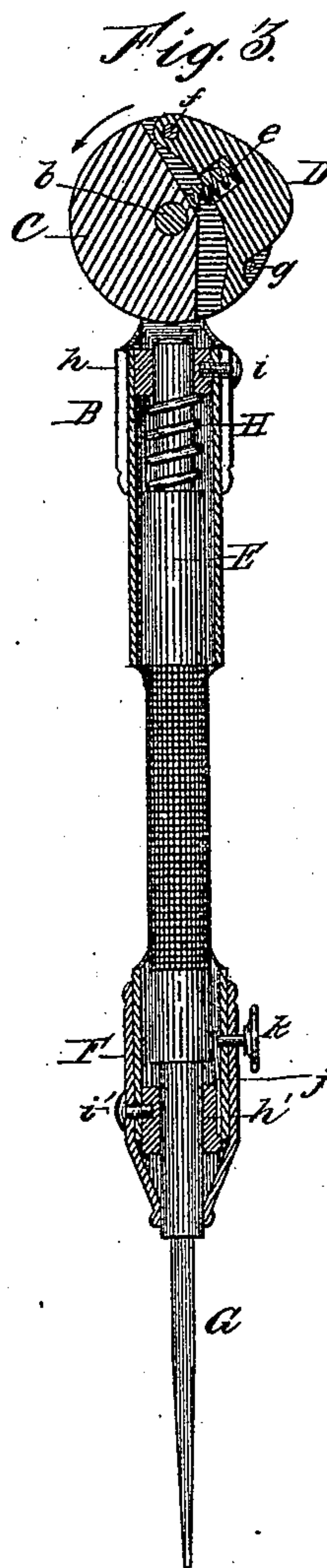
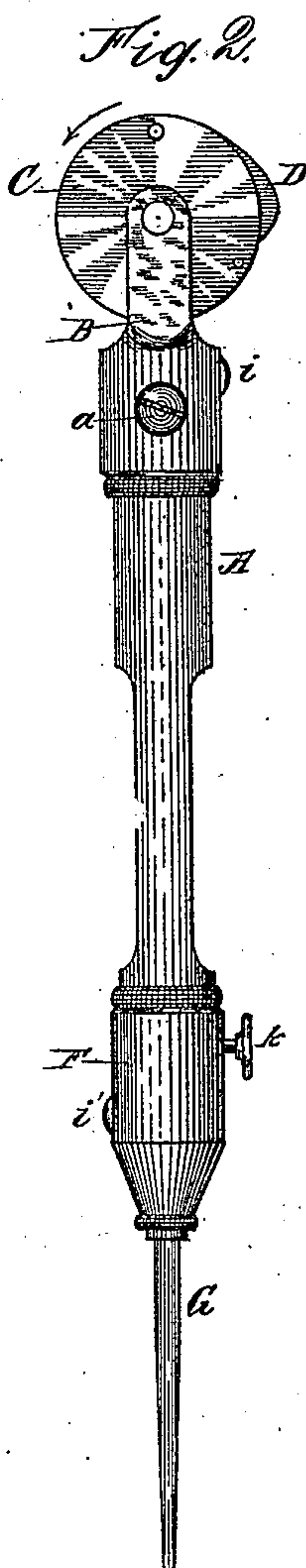
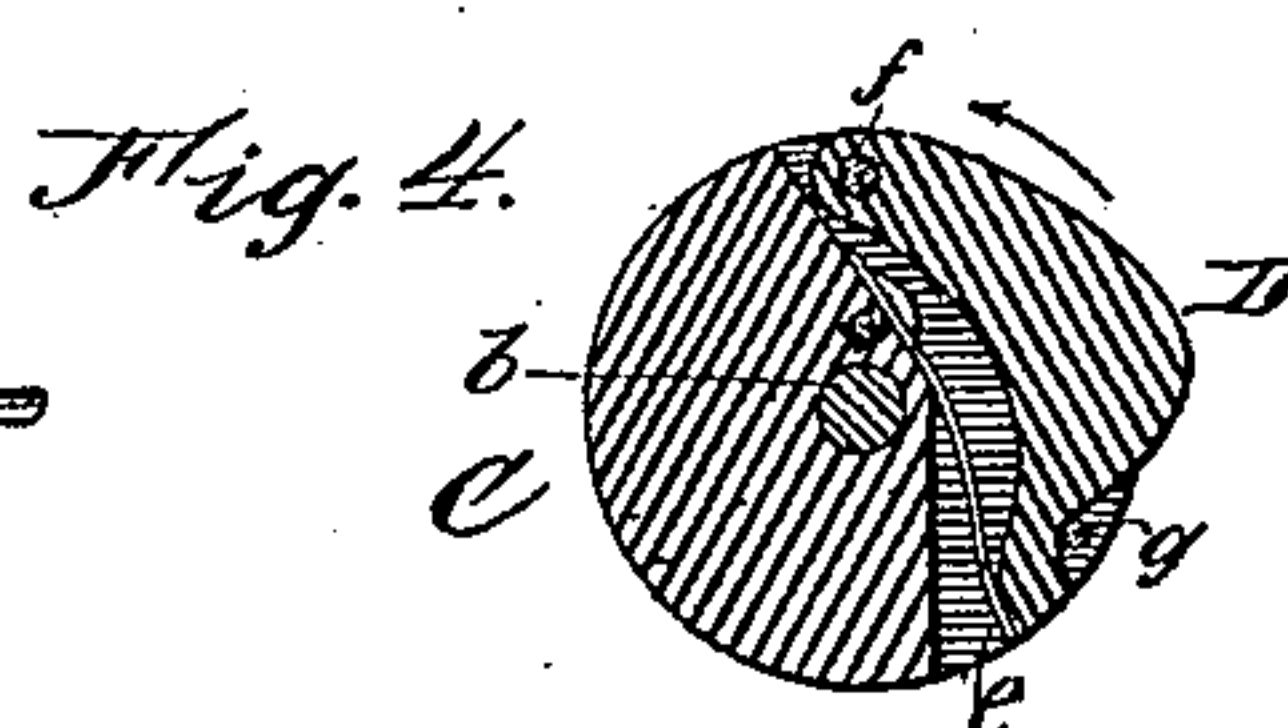
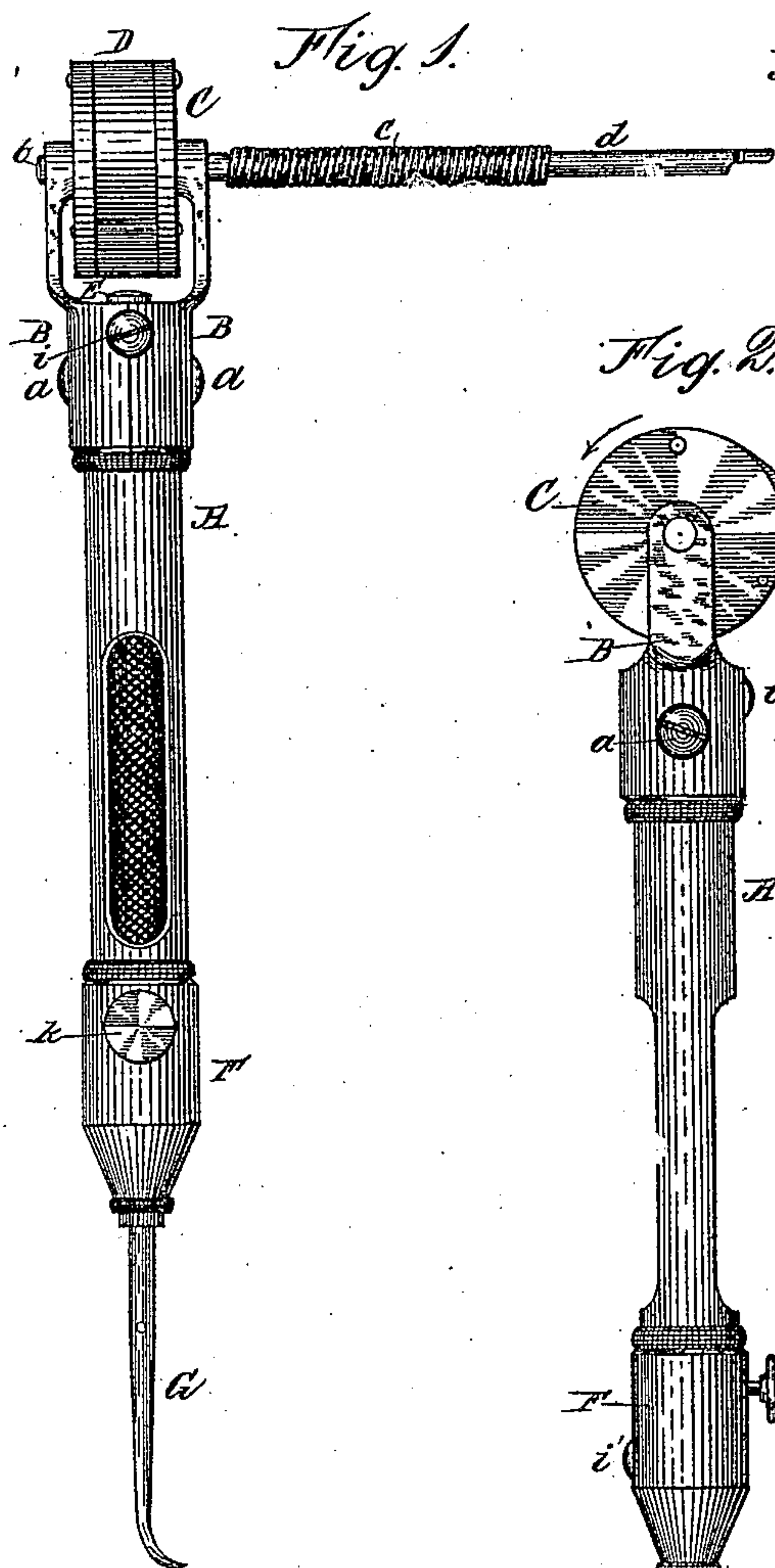


(No Model.)

E. EBI.  
DENTAL PLUGGER.

No. 470,184.

Patented Mar. 8, 1892.



*Attest*  
*A. M. Brainerd.*  
*Witness.*

*Inventor.*  
*Edward Ebi.*  
*By J. M. St. John.*  
*Att'y.*



# UNITED STATES PATENT OFFICE.

EDWARD EBI, OF CEDAR RAPIDS, IOWA.

## DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 470,184, dated March 8, 1892.

Application filed October 25, 1890. Serial No. 369,290. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD EBI, a citizen of the United States, residing at Cedar Rapids, in the county of Linn and State of Iowa, have  
5 invented certain new and useful Improvements in Dental Pluggers; and I do hereby 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 ap-  
10 pertains to make and use the same.

This invention relates to dental pluggers such as are operated by foot-power through the medium of a suitable "engine;" and the  
15 object of the invention is to secure in such a plugger an action closely analogous to the hand-tool and mallet and such as not to jar the hand of the operator, to provide for a continuous running of the engine with an intermittent action of the plunger at will, to se-  
20 cure a nice adjustment of the instrument to the work required of it, and in general to improve the construction and operation of this class of instruments.

The invention consists in the construction,  
25 combination, and arrangement of parts, as hereinafter fully set forth and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front  
30 elevation of a plugger embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a central vertical section of the instrument in the same plane as Fig. 2. Fig. 4  
is a similar section of the tappet-wheel with a modified form of spring under the tappet,  
35 and Fig. 5 a similar view showing the tappet-wheel without any spring.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A is the body of  
40 the instrument, a tubular piece with slots about in the middle thereof to permit the thumb and finger of the operator to reach the plunger E inside. To the upper end of this tube is secured a pair of bearings B B by suitable  
45 screws *a a*. Between these bearings, on an arbor *b*, is mounted a wheel C, provided with a tappet or hammer D. The arbor is preferably provided with a coil-spring connection *c*, with the shank *d*, whereby a flexible connec-  
50 tion is had with the engine. The tappet, which fits loosely in a recess formed for it in one side of the wheel, is pivoted at one end

on a pin *f* near the periphery of the wheel and is adapted to swing outwardly to the limit of its movement, as determined by a stop *g*,  
55 or inwardly to a point where the outer face of the tappet and the periphery of the wheel practically coincide. The tappet may be provided with a spring *e* to hold it outwardly; but the use of a spring is not absolutely re-  
60 quired, since the centrifugal action of the tappet-wheel when in rapid motion produces the desired result.

In suitable bearings *h h'*, fitted to the upper and lower ends of the tube, respectively,  
65 is mounted a plunger E, which takes the ordinary plugging-tools G at the lower end. The portion of this plunger coincident with the slots in the tube is milled for convenience in turning it as desired in the operation of the  
70 instrument. Between the upper bearing and a shoulder formed on the plunger is a spring H, the tendency of which is to depress the plunger. For convenience in removal the bearings are secured in place by screws *i i'*.  
75 Near the lower end, convenient to the finger of the operator, is a button *k*, the stem of which extends inwardly and is adapted to press against or to force another part into contact with the plunger and hold the same at any  
80 desired point with relation to the tube or casing. A spring *j* tends to throw this button out of contact with the plunger when released. The parts are covered and a neat finish given  
85 to the lower end of the instrument by a thimble F. To increase the relative force of the blow delivered by the tappet, it may be loaded with lead, as indicated by the part *l* in Fig. 5.

The operation of the instrument will now be understood. Motion being imparted to the  
90 tappet-wheel in the direction indicated by the arrows and the plunger being in normal position, no part of the instrument except the wheel moves. This being the case, it is possible for the operator to apply the plugging-  
95 tool directly to the gold filling and with the greatest nicety and precision without the necessity of stopping the engine, as is ordinarily the case. The operator now presses downwardly on the casing, thus carrying the tap-  
100 pet-wheel nearer to the plunger and causing the tappet to strike the upper end of the plunger in the revolution of the wheel. The force of the blow may be graduated by either the



extent of the downward pressure of the casing or by the speed of the engine, and in so doing the hand of the operator is not shaken at all by the action of the plugger, so that it is possible for him to move the instrument, to any angle or turn it either way or hold it steadily in a fixed position with great ease and accuracy. It is to be particularly observed that, inasmuch as the tappet is pivoted at a distance from the striking-point, the blow which it delivers to the plunger is a hammer-blow corresponding very closely to the action of the hand-mallet. From the nature of the construction it follows that the tappet can never miss striking the end of the plunger if the latter is pushed high enough, the centrifugal force serving always to throw the tappet out to normal position, counteracting the recoil, however high the speed of the engine may be. This constitutes an important feature of advantage over such pluggers as are provided with a positive cam-wheel and a spring-controlled plunger, since in the case of the latter pluggers the speed of the wheel often exceeds the ability of the spring to counteract the recoil and the cam passes the plunger without striking it. By means of the button the operator is able to hold the plunger at any desired position with reference to the casing and the tappet-wheel, so that, the speed of the engine being uniform, the blows of the tappet are delivered with perfect uniformity.

Inasmuch as the instrument operates perfectly with the plunger in a fixed position, it is evident that the plunger need not necessarily be movable with respect to the tappet-wheel. It is, however, desirable that it should be both in turning and moving endwise and for the purposes already specified.

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

1. In a dental plugger, the combination of a plunger adapted to hold the plugging-tool and a revoluble tappet-wheel, the tappet be-

ing pivoted at a distance from the point of engagement with said plunger and adapted to be thrown into contact with said plunger by centrifugal force, substantially as and for the purpose set forth.

2. In a dental plugger, the combination of a tool-holding plunger and a tappet-wheel mounted contiguous to the end thereof and movable with respect thereto and having a pivoted tappet adapted to strike the end of said plunger when thrown into engagement therewith by the revolution of said wheel.

3. In a dental plugger, the combination of a tool-holding plunger, a casing within which said plunger is mounted and having bearings adapted to support a wheel opposite the end of said plunger, a tappet-wheel having a pivoted tappet actuated by centrifugal force, and a spring adapted to force the plunger normally out of contact with the tappet, substantially as and for the purpose set forth.

4. In a dental plugger, the herein-described tappet-wheel composed of the wheel C, a tappet D, pivoted therein near the periphery thereof, and a stop to determine the outward movement of said tappet, whereby the tappet-wheel is adapted to actuate a tool-holding plunger by centrifugal force, substantially as and for the purpose set forth.

5. In a dental plugger, the combination of a tappet-wheel having a yielding tappet therein, a casing having bearings thereon adapted to support said wheel, a plunger adjustably mounted within said casing, and a button mounted in said casing and adapted to hold the plunger in a fixed position with relation to said casing by pressure, substantially as described.

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

EDWARD EBL.

Witnesses:

S. W. BRAINERD,  
N. H. MYERS.