

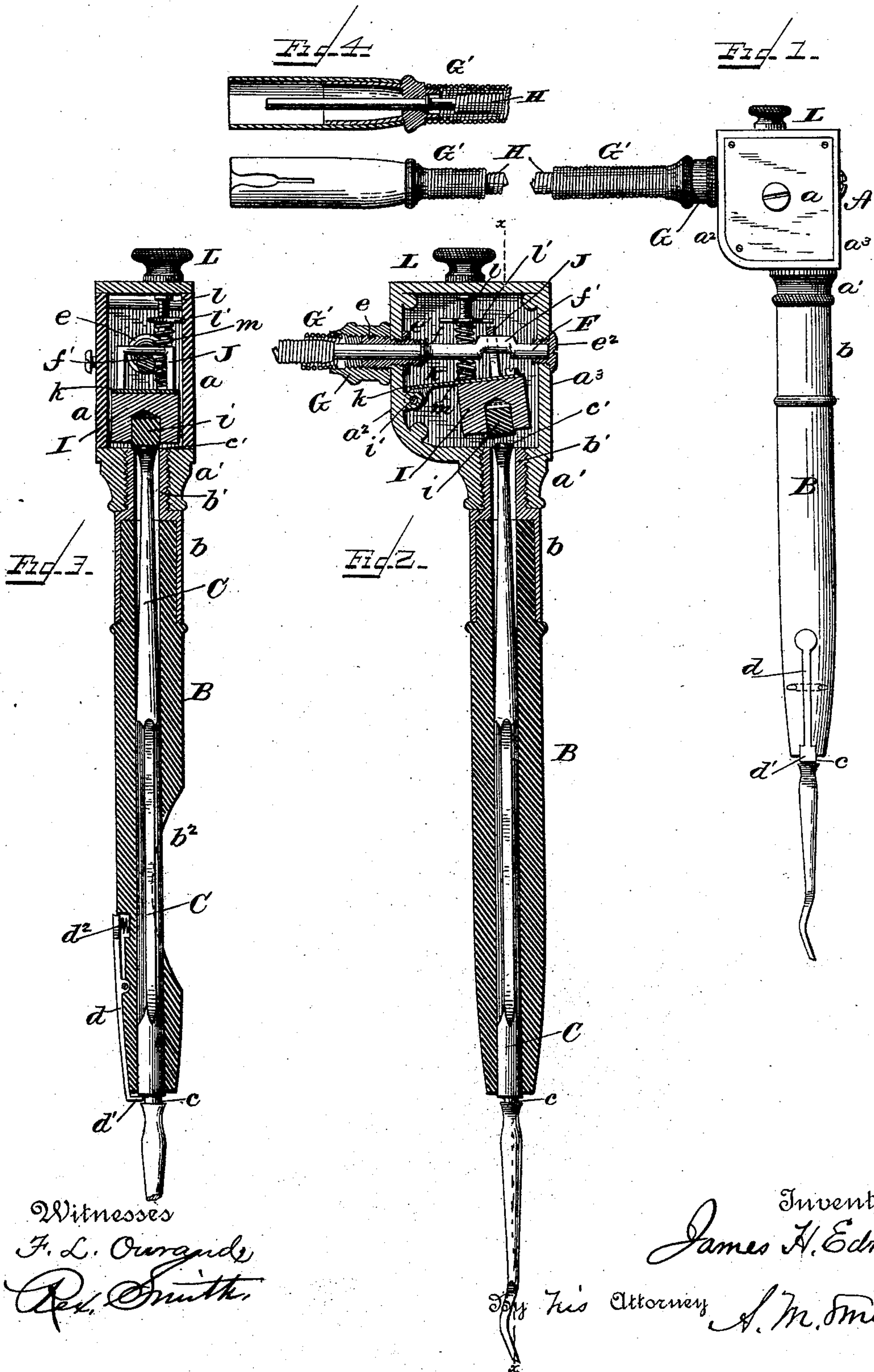
(No Model.)

J. H. EDMONDS.

DENTAL PLUGGER.

No. 360,864.

Patented Apr. 12, 1887.



Witnesses  
F. L. Ourgande  
R. Smith.

Inventor  
James H. Edmonds.  
By his Attorney S. M. Smith.



# UNITED STATES PATENT OFFICE.

JAMES H. EDMONDS, OF VALPARAISO, INDIANA.

## DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 360,864, dated April 12, 1887.

Application filed January 15, 1887. Serial No. 224,455. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. EDMONDS, of Valparaiso, county of Porter, and State of Indiana, have invented a new and useful Improvement in Dental Mallets or Pluggers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to a dental mallet or plugger in which a crank is employed for lifting or giving the inoperative throw to the hammer; and it consists in connecting the hammer to one end of a support pivoted to the case and operated by a crank or equivalent device.

It further consists in journaling the crank-shaft at one end in the coupling which connects the power-conveyer shaft to the case at one side and at its other end in an adjustable plug or set-screw, by means of which wear can be compensated and rattling of the parts prevented.

It further consists in the combination, with the hammer supported and actuated or raised by means of the crank, as described, of a spring adjustably connected with said hammer or its support for giving the operative throw to the hammer, and in certain details of construction and arrangement of parts, hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved dental mallet. Fig. 2 is a longitudinal section through the mallet, showing the crank-shaft and plugging-tool in side elevation. Fig. 3 represents the mallet in longitudinal section, taken at right angles to that shown in and on the line  $x x$ , Fig. 2; and Fig. 4, a section through the sleeve for coupling the conveyer-shaft to the engine or driving-power.

A indicates the head of the instrument, made preferably approximating a rectangular box or case in form, with one of its lower angles or corners rounded, as shown, and with its sides  $a$  removably attached to corner posts or ears by screws or other suitable fastenings. The lower side of this case has a cylindrical boss or projection,  $a'$ , having a central screw-threaded perforation to receive the sleeve or tubular stem B, in which the plugging-tool C is secured and operates, as will appear. The

tube or sleeve B is composed, preferably, of hard rubber, but other suitable material may be used, and is provided on one end with a metallic ferrule,  $b$ , having a screw-threaded shank,  $b'$ , which screws into the boss or tubular projection  $a'$ , for securing the sleeve B to the case. The sleeve is cut away on one side at  $b^2$ , to expose and facilitate the manipulation or rotation, by the action of the thumb or finger thereon, of the inclosed plugger-tool, and is grooved longitudinally at its lower end to receive a thumb-latch lever,  $d$ . This lever is pivoted through suitable ears at or near the center of its length to the sleeve B, and has its outer end bent inward over the end of the tube to form a latch,  $d'$ , which engages a peripheral groove,  $c$ , formed in the plugger-tool for holding the latter in the sleeve and preventing its accidental displacement. The groove  $c$  is made of slightly greater width than the thickness of the latch  $d'$ , to permit a slight endwise movement of the tool relative to the sleeve, to adapt it more fully to the work required of it, as by this construction, when the hammer is lifted, the pressure of the plugging-tool on the tooth serves to slightly lift said tool also, preparatory to the blow of the hammer. The latch  $d'$  is held in engagement with the bit or plugger C by means of a spring,  $d^2$ , interposed between the heel end or thumb-piece of the lever  $d$  and the tube B, as shown in Fig. 3.

The head  $c'$  of the tool C projects slightly beyond the threaded shank of the ferrule  $b$  and into the case A just enough to adapt it to receive and be acted upon by the hammer, as will appear. The sides  $a^2 a^3$  of the case or head are perforated— $a^2$  to receive a perforated plug,  $e$ , in which the crank-shaft F has a bearing. The plug or bearing  $e$  is screw-threaded on its inner end, to adapt it to enter and pass through the wall  $a^2$  of the case and to receive a jam-nut,  $e'$ , for holding the bearing-plug at any desired adjustment. The outer end of the bearing-piece is made larger than the part which screws into the case, forming a shoulder which may be made to abut against the outer face of the case or head, and thereby, in connection with the jam-nut referred to, effectually prevent accidental endwise movement of the bearing and of the crank-shaft journaled therein.



The enlarged outer end of the bearing-piece *e* is also screw-threaded to receive the screw-threaded cap or thimble *G*, secured to the end of the flexible sleeve-covering *G'* for the flexible conveyer-shaft *H*, for uniting said sleeve to said casing. The conveyer-shaft *H* may be united or coupled to the crank-shaft and also to its actuating or power shaft in any usual or preferred manner. The side *a*<sup>3</sup> of the head or case has a screw-threaded perforation formed through it in line with the perforation in the wall *a*<sup>2</sup>, and a screw-threaded plug, *e*<sup>2</sup>, passes through said perforation and is adjustable therein. The inner end of this plug or set-screw *e*<sup>2</sup> is socketed to receive and form a bearing for one end of the crank-shaft *F*, as shown. This shaft *F* has a collar, *f*, formed upon it, which abuts against the inner end of the bearing or coupling piece *e*, and by adjusting the set-screw bearing *e*<sup>2</sup> until the shaft is snugly stepped therein and the collar *f* is made to abut against the bearing-piece *e* end play of the shaft is effectually prevented, and by the adjustment of the screw-bearings of the shaft all wear of the parts can be readily compensated for and rattling thereof in operation effectually prevented.

*I* indicates the hammer, made, preferably, of steel or other suitable hard metal and provided in its lower or operative face with a cylindrical socket to receive a plug or cylinder, *i*, of hard wood—such as ebony, lignum-vitae, or equivalent material combining toughness with a slight degree of elasticity not found in the metal, and forming the hammer-face—which acts on the head of the plugger-tool.

The socket in the hammer is preferably made tapering at its inner end, and the end of the plug *i* fitting in said socket being made square, as indicated in Figs. 2 and 3, an air space or cushion is formed at the inner end of the plug, which serves to give an increased elasticity to the blow of the hammer, found to be very effective in practice. The hammer *I* is secured to a plate or support, *k*, by screws or in other suitable manner, said plate or support being made, preferably, in the form of a flat spring, which extends upon one side of the weight or hammer *I*, forming the handle thereto, and is pivoted at *i'*, through suitable lugs or ears formed upon it and the side wall of the case, to the latter, as shown.

A loop, *J*, formed upon or secured to the upper face of the hammer or its support, extends around the crank *f'* of the crank-shaft, and with its upper or cross bar arranged in such relation to said crank as to cause the latter, when rotated, to act to lift the loop or yoke, and with it the hammer, preparatory to its operative stroke.

*L* is a thumb-screw, which passes through a perforation in the upper side or wall of the case or head *A*, turning freely therein, and provided inside of said case with a collar, *l*, which prevents endwise movement of the screw. Below said collar *l* the screw has an elongated

plate, *l'*, having a screw-threaded perforation, in which the screw works for adjusting the plate, as desired, the side of the plate *l* resting against one of the sides of the case and being thereby prevented from turning with the screw.

Below the plate *l'*, and between it and the hammer *I* or its support *k*, and surrounding the inner end of the screw *L*, is a spiral spring, *m*, the tension of which is exerted to impart the operative stroke to the hammer, and which tension may be adjusted by turning the screw, and thereby raising or depressing the plate *l'*, for compressing the spring or allowing it to expand, and increasing or diminishing the force of the blow of the hammer, as may be required.

Motion is imparted to the flexible conveyer-shaft and thence to the crank-shaft from any usual or suitable power, or in any usual or preferred manner.

The operation of the several parts will be readily understood without further description.

It will be obvious that the form and arrangement of some of the parts may be varied—such, for example, as the spring for giving the operative stroke to the hammer; also, that the form of the crank may be varied, and that a single crank or eccentric may be employed, in lieu of the double crank shown, without departing from my invention, the preferred form and arrangement of the parts of which are above described.

I am aware that hammers have been employed inclosed in a dental-plugger case in connection with a crank for actuating the same; but in such constructions, as far as I am informed, the hammer, instead of being pivoted within the case, has been made to reciprocate in ways therein. This I do not claim; but,

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

1. In a dental mallet, the hammer entirely inclosed and pivoted at one end, in combination with a crank for operating said hammer, substantially as described.

2. In a dental mallet, the hammer arranged upon a horizontal spring-support, which is pivoted at one end to the case and operated by means of a crank, substantially as described.

3. In a dental mallet, the crank-shaft journaled at one side in the coupling which connects the power-shaft with the case and at the other in a bearing which is made adjustable, substantially as and for the purpose described.

4. In a dental mallet, the hammer or hammer-support pivoted at one end to the case, in combination with the crank and the tension-adjustable spring for actuating said hammer, substantially as described.

5. The hammer made of metal, provided with a socket for and in combination with a plug or hammer-face of hard wood or equivalent material, arranged to leave an air-space or cushion



in the hammer at the inner end of said plug, substantially as described.

6. The combination, with the tube or handle, of the thumb-latch lever and a plugging tool or  
5 bit having a peripheral groove for engaging said latch and adapted to permit slight end-play of the tool under the action of the hammer, substantially as described.

In testimony whereof I have hereunto set my hand this 13th day of January, A. D. 1887.

JAMES H. EDMONDS.

Witnesses:

W. P. BELL,  
FRANCK L. OURAND.