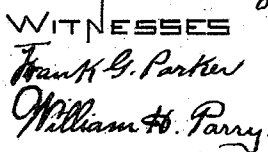


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DENTAL Mallet.

No. 577,887.

Patented Mar. 2, 1897.



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UNITED STATES PATENT OFFICE.

JERE E. STANTON, OF BOSTON, MASSACHUSETTS.

DENTAL MALLET.

SPECIFICATION forming part of Letters Patent No. 577,887, dated March 2, 1897.

Application filed March 25, 1896. Serial No. 584,787. (No model.)

To all whom it may concern:

Be it known that I, JERE E. STANTON, a citizen of the United States, residing in Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented a certain new and useful Dental Mallet, of which the following is a full specification.

My invention relates particularly to the class of dental implements known as mallets, the objects of my improvements being, first, to construct an angle-mallet or one in which the blow is dealt at an angle with the longitudinal axis of the implement, and, second, to adapt it to be operated by a pneumatic bulb.

Referring to the accompanying drawings, Figure 1 shows a complete device embodying my invention, part being shown in elevation and part in perspective. Fig. 2 is an enlarged longitudinal section of the mallet. Figs. 3, 4, and 5 are sectional detail views further enlarged.

The mechanism of the mallet is inclosed in the casing or handle A A', made in two parts, of which the part A is a simple tube closed at the outer end by the screw-cap a⁴. The part A', as here shown, has at one end the connecting-piece a³, whereby the two parts A and A' may be readily joined together or detached, preferably by a bayonet-joint. The part A' carries the tube a, in which is held the spring B B', the outer end of the tube and spring being bent at any angle at which it is desired to deliver the blows.

b² is the tool which gives the blows, and this is detachable from the tool-holder b, being frictionally held therein in the manner shown in Fig. 3. Different tools may thus be inserted, depending on the character of the work. The tool-holder b has the shank b³, by which it is attached to the spring B, the said spring being closely drawn over the shank.

b' is a flange or stop on the tool-holder, which normally rests against the bottom of the tube a.

a' is a cap-piece which screws over the end of the tube a.

The spring B B', as here shown, is made in two parts joined together by the coupling-piece B³. (See Fig. 5.) This construction is preferable in the present form of device to a single spring for reasons presently to be seen.

The springs B B' are tightly drawn over the shanks on each side of the coupling-piece B³, and thus frictionally held thereto, or, if desired, they may be screwed on. The two parts B B' form in any event virtually one spring. In a similar manner the shank H is secured to the inner end of the spring B', the shank being provided with the conical head h.

K is a piston which moves back and forth in the tube A and has the packing k. The piston is hollow in the inside and carries a clutch consisting in the present case of a pair of jaws L L', pivoted together at l. In the drawings the jaws are directly connected to the piece K', which screws into the piston K. The jaws L L' are normally held together in the position shown in Fig. 2 by means of the spring l'.

N is a shank which plays loosely in a hole in the piston K, being provided with the conical head n, which is so arranged that when the shank N is pressed against the jaws it will force them apart against the pressure of the spring l'.

The piston K is kept in the position shown in Fig. 2 by means of the cushioning-spring G.

The tube A has the inlet air-tube a², which is connected by the flexible tube E with the pneumatic bulb C.

The screw-cap a⁴ has the screw F, preferably provided with a milled head.

f is a piece let into the screw F, against which the shank n bears when the piston is driven through the tube A.

a⁵ is an air-outlet passage.

The parts are so constructed and arranged that by pressure on the bulb C the piston K is driven toward the cap a⁴, thereby drawing out the spring B B', which for all intents and purposes, as was said above, may be considered as one spring, the conical head h being held between the jaws L L' of the clutch. When in the journey of the piston the shank N comes in contact with the piece f or with the inner end of the screw F, the conical head n is driven between the jaws L L', separating the same and causing them to open out like a pair of ice-tongs, thus releasing the head h at the end of the spring B B'. The result is, then, that the spring B B', released by the clutch, quickly snaps together, with the effect that a sharp blow is imparted to the tool

6². When pressure is taken off the bulb C, the piston K is driven back to the position shown in Fig. 2 by means of the spring G, the conical head *h* at the end of the spring forcing apart the jaws L L' and being locked therein.

E' is an inlet-valve in the tube E to supply air to the bulb.

The object of the enlarged coupling-piece 10 B² is to practically fill the tube *a*, so as to prevent the air from passing out through the tube *a*. If other means are provided to prevent the air-egress at this point, the spring B B' can be made in one piece.

15 The action of the spring B B' in striking the blow around a corner is one of the chief features of my invention. The spring is held during its stretching by the flange *b'* at its outer end, and when, after stretching, the inner end of the spring is released the snapping together causes the blow. The spring is very 20 closely wound, so that normally the coils are in contact when closed together.

A spring made of round wire is shown in 25 Figs. 2 and 3. In this case the shank *b*³ on the tool-holder is preferably long enough to pass around the bend of the spring, as shown in Fig. 3, so as to prevent any possible over-riding of the strands of the spring around the 30 curve when the spring snaps together. If the spring-wire is square in section, as shown in Fig. 4, the shank *b*³ of the holder *b* may simply enter the spring far enough to be frictionally held therein, as no buckling of the 35 spring could occur.

The strength of the blow depends, of course, on the length to which the spring is distended before being released, and this is regulated by means of the thumb-screw F. At the moment of striking the blow the flange *b'* is 40 driven momentarily out of contact with the end of the tube *a*.

The bulb C is preferably worked by the heel of the operator, and it is of considerable importance that it be so placed with reference 45 to the foot that no attention need be given in finding the bulb by the foot, as would be necessary were the bulb loose on the ground. For this reason I prefer to have the bulb secured to a frame which fits upon the operator's 50 foot, the arrangement being as shown in Fig. 1. The bulb C is secured to the heel-piece D, which, by means of the sliding plate D², is connected with the toe-plate D'.

55 By means of a slot and screw and with the

adjustable toe-strap D³ the foot-piece may be adapted to any size of foot and so adjusted that when the foot is slipped under the strap D³ the operator has the bulb C directly under his heel.

A practicable angle-mallet, or one in which the pounding-tool at the end may be at any angle with the axis of the handle, even up to a right angle therewith, and at the same time arranged to deliver a blow in direct line with 65 the said pounding-tool, has long been desired. It will be seen that my mechanism, involving a bent spring constrained by a suitable curved or bent support to hold the tool at an angle with the axis of the handle and held 70 at its outer or tool-bearing end, makes such an angle-mallet possible. Moreover, instead of inclosing the tool-bearing spring in a tube it may, if desired, be arranged to operate on a bent or curved mandrel without affecting 75 the principle.

While I prefer to have the tool-bearing spring distended and released by pneumatic means, as shown, I do not confine myself to this form, as, if desired, the outer end of the 80 said spring might be so arranged as to be distended and released directly by the fingers of the operator or by any other means.

I claim—

1. In a pneumatic dental mallet, the combination of a handle with a tube, a tool-bearing spring engaging with said tube near the outer or tool-bearing end, and provided at its inner end with a head, a reciprocating spring-cushioned piston provided with a clutch 90 adapted to engage with said head, air inlet and outlet passages and a pneumatic bulb, all arranged and operating substantially as and for the purposes described.

2. In a pneumatic dental mallet, a handle 95 provided with suitable air inlet and outlet passages, and having the regulating-screw F', in combination with a pneumatic bulb, a tool-bearing spring provided with the head *h*, a reciprocating spring-cushioned piston provided with the pivoted spring-jaws L L', 100 adapted to engage with the head *h*, and the shank and spindle N, *n*, adapted to engage with said jaws, all arranged and operating substantially as and for the purposes described. 105

JERE E. STANTON.

Witnesses:

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