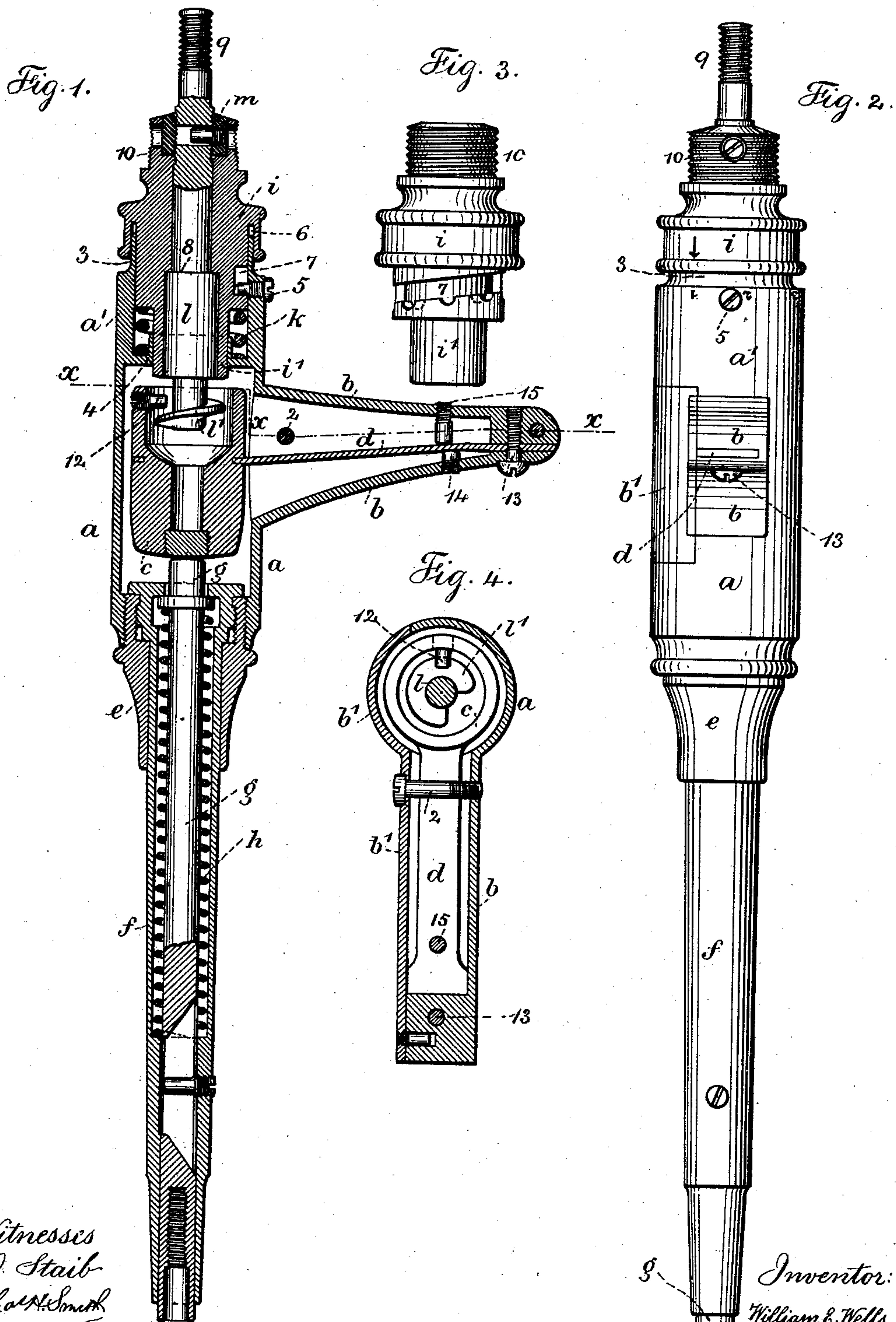


(No Model.)

W. E. WELLS.
DENTAL MALLETS.

No. 472,686.

Patented Apr. 12, 1892.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM E. WELLS, OF NEW YORK, N. Y.

DENTAL MALLET.

SPECIFICATION forming part of Letters Patent No. 472,686, dated April 12, 1892.

Application filed August 24, 1891. Serial No. 403,570. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. WELLS, a citizen of the United States, residing at the city, county, and State of New York, have invented certain new and useful Improvements in Dental Mallets, of which the following is a specification.

In dental mallets constructed according to my former Letters Patent, No. 414,353, the extent of the percussive blow imparted was controlled and regulated by a movement of the hammer-spring and hammer, which practically tightened or loosened said spring. Consequently the relative position of the hammer to the plunger was also changed, and thus the form or character of the blow was altered; and the object of my present invention is to obviate these disadvantages. In my present improvement I obtain a uniform kind of blow that is varied in intensity by the adjustment of the spiral rotating cam that lifts the hammer, the spring and hammer maintaining a fixed position in the stock of the hand-piece and a fixed relation to the plunger-bar. This I accomplish by connecting the hammer to a spring secured at its outer end at the end of a hollow arm forming part of the stock of the hand-piece. The normal position of the hammer and spring in relation to the plunger-bar can be regulated by two small screws. I provide an adjustable sleeve-bearing connected to the upper end of the stock, and through this passes the shaft of the rotatable spiral cam, and this cam and sleeve are adjustable lengthwise of the stock and in line with the plunger-bar for varying the length of stroke or movement of the hammer imparted by the rotation of the spiral cam. This adjustment is accomplished by the partial rotation of the sleeve, and means are provided for holding the parts as adjusted.

In the drawings, Figure 1 is a vertical section of a dental mallet, showing my improvements. Fig. 2 is an edgewise elevation of the same. Fig. 3 is an elevation of the adjustable sleeve-bearing detached, and Fig. 4 is a sectional plan at the line $x x$ of Fig. 1.

The device is illustrated upon an enlarged scale. The hollow cylindrical stock a has a hollow arm b projecting therefrom, and a removable plate b' covers or forms one face or

portion of the arm b and stock a , and the removal of this plate b' permits of the introduction and removal of the hammer c and its spring d . The screw 2 secures the plate b' in place. While I prefer to make the arm b hollow, still it might be in the form of a frame. The sleeve e and tubular end f are connected together and to the lower end of the stock a , and the plunger-bar g passes through the tubular end f , and the helical spring h therein maintains the normal position of the plunger-bar g and effects the return movement of said bar after each percussive blow of the hammer c , and as these parts are well known they do not require further description. The upper end a' of the stock a is open and cylindrical, having a flanged base 4, and its extreme end 3 is made thin, and a screw 5 passes through the said end, as shown.

I provide an adjustable sleeve-bearing i , having a reduced end i' and a circumferential groove at 6. This sleeve-bearing i has an inclined face-groove 7 with edge notches, and said sleeve-bearing is adapted to fit within the end a' of the stock a , the end 3 being within the groove 6 and the end i' passing through the flanged base 4, the inner end of the screw 5 being within the groove 7 and resting in one of its notches and being held there by the action of the helical spring k , whose office is to move the sleeve-bearing endwise against the said screw 5, and as the sleeve-bearing i i' is depressed and rotated it is moved lengthwise either in or out of the end a' and nearer to or farther from the hammer c , according to the direction of rotation given.

I prefer to employ an index consisting of an arrow and numbers on the surfaces of the parts i and a' (see Fig. 2) to indicate which notch of the groove 7 the pin 5 is in, so as to show the extent of movement that will be imparted to the hammer.

The rotatable shaft l has upon one reduced end the usual spiral cam l' and upon the other end a screwed and pinned collar m . This collar m is received in a recess in the outer end of the bearing i , and endwise movement of the shaft l is prevented by this collar m and the shoulder 8; but said shaft is free to be rotated by the usual coupling of the flexible dental-engine shaft, parts of which coupling

are to be connected to the screw-threaded ends 9 and 10 of the shaft and sleeve, respectively.

The hammer *c* is hollow and cup-shaped at the upper end to receive the spiral rotating cam *l'*, and a removable pin 12 passes through the shell of said hammer and is acted upon by the rotation of the cam *l'* in raising the hammer and imparting the blow upon the plunger-bar *g*. As will be seen in Fig. 4, this cam *l'* extends three-quarters around the shaft *l*, and part or the whole of its surface acts upon the pin 12 in raising the hammer against the action of the spring *d*, which spring brings down the hammer and gives the percussive blow when the pin 12 passes off the upper edge of said cam at each rotation, and the extent of movement imparted to said hammer by said cam is governed by the position of said cam *l'* and the sleeve-bearing *i i'* in their relation to said hammer as effected by the longitudinal movement and rotary adjustment of said bearing by the groove 7 and its notches and the pin 5. The cup-shaped upper end to the hammer *c* possesses advantages in that if the pin 12 should wear out or break another one can be inserted or another can be put through any adjacent part of the shell of the hammer, and the weight of the hammer is evenly balanced, and its movement is consequently more regular.

The spring *d* is secured by a screw 13 in the grooved outer end of the hollow arm *b*, and it is adjusted in relation to the upper end of the plunger-bar by the screws 14 15. The spring *k* might be dispensed with and holes spirally placed be substituted for the notched groove 7, in which case the pin 5 would be attached to a spring-plate on the face of the stock and be operated in moving the bearing *i i'* endwise.

My improved device is exceedingly simple

and effective both in positive action and ready adjustment, and ample capacity is provided in the notched groove 7 for varying degrees of the percussive blows of the hammer.

I claim as my invention—

1. The combination, with the stock, the plunger-bar, the hammer, and its spring, of a spiral cam and its rotating shaft axially in line therewith, and means, substantially as specified, for longitudinally adjusting and holding the cam and its shaft in axial relation to the hammer to vary the extent of movement of said hammer and the percussive blow given thereby, substantially as set forth.

2. The combination, with the hammer and its spring, of a stock for containing the hammer and an arm extending out from said stock, and in which arm said spring is immovably secured at its outer end, the plunger-bar *g*, and the separate screws 14 15 at opposite sides of said spring for adjusting the spring and hammer in their fixed relation to the plunger-bar, and a cam for operating the hammer, substantially as set forth.

3. The combination, with the stock *a*, the arm *b*, and plunger-bar *g*, of the hammer *c* and its spring *d*, the shaft *l*, and cam *l'*, the endwise-movable sleeve-bearing *i i'*, having a notched groove 7, the pin 5, and spring *k*, substantially as set forth.

4. The stock having a thin upper end 3 and flanged portion 4 and the hollow arm, in combination with the sleeve-bearing *i i'*, having a circumferential groove 6 and a notched groove 7, the pin 5, and spring *k*, the shaft *l*, cam *l'*, and the shoulder 8, and collar *m*, substantially as set forth.

Signed by me this 17th day of August, 1891.
WILLIAM E. WELLS.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.