I. A. SALMON.

Automatic Dental Mallets.

No. 166,228. Patented Aug. 3, 1875.

FIG. I.

FIG. III.

FIG. IV.

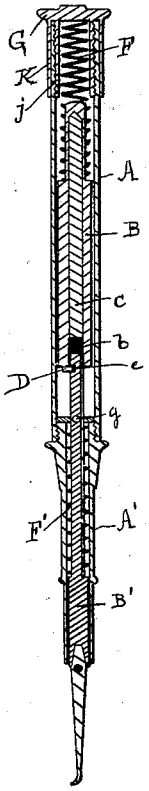


FIG. II.

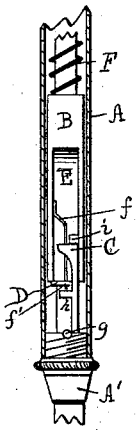
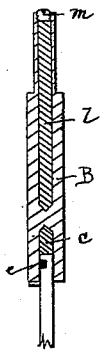


FIG. V.



WITNESSES.

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IRA A. SALMON, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN AUTOMATIC DENTAL MALLETS.

Specification forming part of Letters Patent No. **166,228**, dated August 3, 1875; application filed January 8, 1875.

To all whom it may concern:

Be it known that I, IRA A. SALMON, of the city of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Automatic Mallets or Pluggers; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings making a part of this specification, in which—

Figure 1 is an elevation of the instrument. Fig. 2 is a longitudinal section, the front half of the case being removed, showing the parts in position. Fig. 3 is a view of the end of the hammer with the catch-plate attached. Fig. 4 is a longitudinal section through the middle of the hammer and spindle before the blow is produced. Fig. 5 is the same as Fig. 4, showing the position of the spindle after the blow is struck.

To enable others skilled in the art to make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

My invention relates to that class of pluggers used by dentists, known as automatic pluggers; and it consists in the several combinations of devices hereinafter described and claimed.

In the drawings, A represents the upper section of the case, and A′ the lower section. B represents the hammer; B′, the spindle or stem of the point-holder, and *a* the plugger-point. C is a stud attached to the lower section of the case A′. It supports the hammer when not in use, acts as a tripper to release the hammer, and also serves as a stop to the case after the blow has been produced, its slot *h* acting in conjunction with the pin *g*. The slot prevents the rotation of the spindle. D is a steel plate, which we will call a catch-plate. A fine spring, *f*, is attached to this plate, as shown at *f′*, the upper end of which is secured in and presses against the side of the groove E in the hammer in such a way as to press the inner edge of the catch-plate against the spindle. *b* is a hole in the hammer, in which the spindle works freely, yet closely. *c* is a cushion, of lead or other suitable material, in the upper part of the hole, as represented in Fig. 5, or it may serve, also, to load the hammer, as in Fig. 4. By loading the hammer the instrument may be made smaller than when a solid steel hammer is used, (which is very desirable,) and at the same time secure the necessary weight. The hammer may be loaded with quicksilver by drilling two holes longitudinally, so as almost to meet, as in Fig. 5, filling the upper one with quicksilver, *l*, and securing it by a closely-fitting screw, *m*, lead or any suitable material being used at *c* for a cushion; or the hammer may be drilled, as in Fig. 4, and some suitable material used to confine the quicksilver and separate it from the cushion *c*. *e* is a shoulder or notch in the spindle, with which the catch-plate engages to keep the hammer and spindle in their proper relative position when the case is pressed down upon the point-holder or spindle; or the point-holder is pressed into the case to produce a blow of the hammer. *i* is a stop-pin or other stop in the groove of the hammer, by means of which the hammer rests against the end of the stud C, (after the blow is produced,) and the hammer is carried up again until the catch engages with the spindle ready for another blow. F is a spiral spring in the upper section of the case, and F′ a spiral spring in the lower section. G is a cap with two cylinders attached, *j* being the inner cylinder, with a double screw upon its outer surface, corresponding to a double groove cut upon the inside of the upper end of the case A, whereby I secure quicker action of the screw in adjusting the spring, and without any loss in the bearing. *k* is the outer cylinder or sleeve to protect or cover the screw on the inner cylinder, this sleeve being sufficiently large to allow the upper end of the case to screw upon the cylinder *j* and between the two. The object of using the cylinder *j*, instead of a solid screw, is to allow the spiral spring F and the upper part of the hammer to pass up into the cylinder, thereby allowing a heavier hammer to be used without making the case too large or too long.

By my construction of the sleeve and the screw cut on the inner side of the case, I am enabled to utilize nearly the entire length of the case without exposing the screw or screw-thread.

The operation of my invention is as follows:

The operator holds the instrument in the hand like a pen. The point *a* is placed against the gold in the tooth, and by pressing toward the tooth the case is carried down toward it, by which pressure the two spiral springs are compressed. The hammer B is held in the same relation to the spindle B′ by the catch-plate D, Fig. 2, which is held in the notch or hole *e* by the spring *f*, Fig. 2, until the stud C (being attached to the lower section of the case) is carried down until its inclined plane or wedge-shaped edge forces the catch-plate D out of the notch *e*, when the hammer is thrown down by the force of the spiral spring F until the cushion *c* strikes against the end of the spindle, thereby condensing the gold in the tooth. The pin *g* coming in contact with the upper end of the slot *h*, the case is kept from being pressed down upon the spindle farther after the blow is given. When the pressure is removed from the tooth the spiral spring F′ in the lower section of the case raises the case and hammer up to its former position, or throws the spindle out of the case, (the hammer resting upon the stud C,) when the catch D is thrown into the notch *e* by the force of the spring *f*, and the pin *g* rests upon the upper end of the lower section of the case A′, the pin *g* being confined in its movement between the upper and lower ends of the slot *h*, the length of this slot determining the length of the stroke. The force of the blow is increased by screwing the cap G down upon the case, which compresses the spring F, and vice versa.

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

1. In combination with the hammer B, the leaden cushion *c*, substantially as and for the purpose set forth.

2. The hammer, drilled and loaded, substantially as shown.

3. The stud C, the slot *h*, and the small stud *g* and stop *i*, constructed and operating substantially as and for the purpose set forth.

4. The double thread or groove on the inside of the upper end of the case A, whereby I secure a quicker adjustment without loss of bearing.

5. The cap, with its double screw and protecting-sleeve, constructed and operating in the manner substantially as described.

6. The combination of the hammer B, catch D, and spring *f*, or their equivalent, operating in conjunction with the shoulder, notch, or hole in the spindle, substantially as shown.

7. The combination of the catch, its spring, the hammer, spring F, and cap G, substantially as described, and for the purpose set forth.

IRA A. SALMON.

Witnesses:
A. K. P. JOY,
GEO. A. SALMON.