(No Model.)

G. A. FOSTER & C. E. HOFFMAN.

DENTAL PLUGGER.

No. 513,362. Patented Jan. 23, 1894.

Fig. 1.

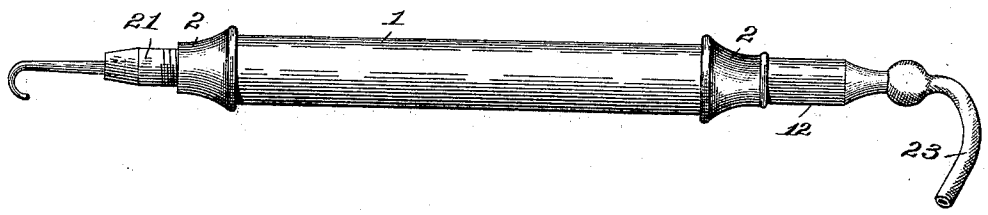


Fig. 2.

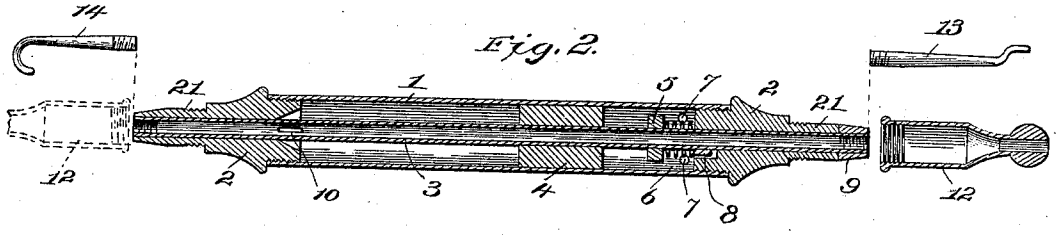
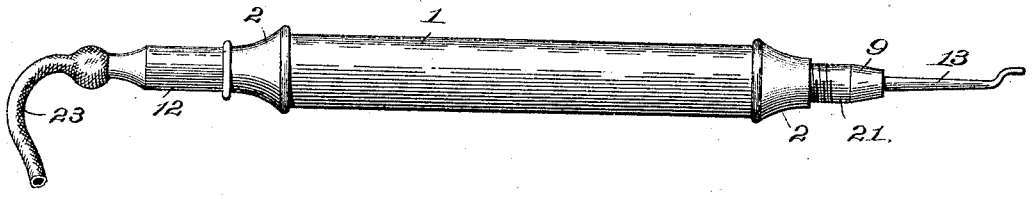


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE A. FOSTER AND CHARLES E. HOFFMAN, OF NEW ALBANY, INDIANA.

DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 513,362, dated January 23, 1894.

Application filed April 10, 1893. Serial No. 469,792. (No model.)

To all whom it may concern:

Be it known that we, GEORGE A. FOSTER and CHARLES E. HOFFMAN, citizens of the United States, residing at New Albany, in the county of Floyd and State of Indiana, have invented certain new and useful Improvements in Dental Instruments; and we 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 appertains to make and use the same.

The invention has reference to dental pluggers or mallets, and relates more especially to that class of instruments which are operated pneumatically, though the broad features of the invention are applicable to pluggers generally.

The object of the invention is to provide an improved instrument of this description which is adapted to deliver either a direct forward blow, or a back-hand blow toward the operator, as may be desired. Instruments having this general capability of delivering a blow in either direction are not new with us, but we believe ourselves to be the first to provide a dental plugger having means at either end for attaching thereto a plugger, either end of the instrument being also adapted for connection with operating mechanism.

In the accompanying drawings forming part of this specification, Figure 1 is a side view of the plugger arranged to deliver a back-hand stroke. Fig. 2 is a central longitudinal section, the coupling and plugger points being shown detached. Fig. 3 is a view similar to Fig. 1 except that the instrument is arranged to strike a forward blow.

Referring to the several views, 1 denotes a tubular barrel or casing, having caps or heads 2 secured in its ends, preferably as shown in Fig. 2, viz., by a thread cut on the reduced inner end of the heads taking into the correspondingly threaded ends of the tubular casing. The caps or heads 2 are provided with means, such as a screw-threaded neck-portion 21, for attaching a coupling by means of which the plugger is connected with any suitable or preferred operating mechanism; that shown in the present illustration of the invention being a rubber or other flexible pipe extending to an air pump or compressor operated by hand or foot or in any convenient manner. These heads are identical in construction, at least so far as the means for connecting the plugger to its operating mechanism are concerned, the object of this construction being to permit of the connection of either end of the instrument with the air pipe, or other source of power.

The numeral 3 indicates a tubular spindle passing centrally through the barrel and heads, and having a limited endwise movement to and fro in the same. This spindle is fitted to slide air tight in central openings or passages in the heads, and is constructed at each end to receive any of the ordinary plugging points, as shown at 13 and 14, in Fig. 2, which are screw-threaded as usual at their inner ends and are adapted to be screwed into the open threaded ends of the spindle 3. This point carrying spindle is held by spring pressure normally in a retracted position, as shown in Fig. 2, the mechanism for this purpose being as follows: Secured to the spindle at a point near one end of the barrel of the plugger and inside of the latter is a lug or stop collar 5, between which and the nearest head 2 a coiled spring 6 which encircles the spindle, reacts. The outer end of the spindle at this end of the plugger is provided with an enlarged collar or ring 9 forming a stop or shoulder, which abutting against the end of the head 2 limits the retracting action of the spring.

The numeral 4 denotes the hammer. It is formed of a solid block fitting air tight in the barrel or casing 1 and slides upon a tubular spindle 3. For the purpose of driving this hammer, an opening 10 is formed in the spindle, through which compressed air entering the end of the tube passes into the bore or chamber of the barrel, which drives the hammer against the lug 5 causing the spindle to communicate the blow to the plugger point. On the opposite side of the hammer, the casing is provided with air outlet or exhaust ports 7.

The number 12 indicates a nipple which is shaped to fit over the neck 21 of either head 2, and provided with internal threads to screw upon the threaded part of the head. This nipple is connected at its opposite end with a rubber or other flexible pipe 23 leading to the air compressor or pump, as already ex-

plained, and constitutes the coupling between the instrument and its driving power.

In order to prevent the turning of the tubular spindle when the plugger points are being screwed in, we place a small spline or feather 8 on the spindle, and form a groove in the head 2 in which the spline slides permitting the endwise movement of the spindle but preventing it from turning.

The construction of the instrument being as above described, the operation is as follows: The coupling 12 being screwed on to the head 2, and air being forced into the end of the tube 3 passes through the opening 10 into the space between the tube and the outer casing 1, and causes the hammer 4 to deliver a blow upon the lug 5, which drives the spindle in the direction of the arrow in Fig. 2 against the stress of the spring 6 which causes the rebound of the spindle and plugger point. As already explained, the coupling 12 is reversible, and is adapted to fit either end of the plugger. No matter, however, which end of the instrument is connected with the coupling, the hammer and spindle are always driven in the same direction. Now, it will be evident that, if the straight point 13 be attached to the right hand end of the plugger, (referring to Fig. 2) and the coupling 12 screwed onto the opposite end, as indicated in dotted lines, the blow will be, outward or away from the operator. If, however, the re-entrant point 14 be screwed into the opposite end of the plugger, and the position of the coupler reversed or changed to the right hand end, the blow will be a back-hand one, or a pull toward the operator.

Although we have herein shown our invention as applied to a pneumatic plugger, we wish it understood that the reversible feature of the invention is not limited in its application to any particular kind of instrument.

Having thus described our invention, what we claim is—

1. A dental plugger, having a barrel or body portion, a central spindle provided at either end with means for attaching a plugger point, and a sliding hammer for operating the spindle, in combination with a reversible coupling for connecting the instrument with operating mechanism, said coupling being adapted for attachment to either end of the plugger; substantially as described.

2. A pneumatic dental plugger, having a tubular barrel or body portion, a central tube provided at either end with means for attaching a plugger point, and a sliding hammer encircling the tube, in combination with a reversible coupling for connecting the instrument with an air pump or compressor, said coupling being adapted for attachment to either end of the plugger; substantially as described.

3. A dental plugger, provided at either end with means for attaching a plugger point, in combination with a reversible coupling for connecting the instrument with operating mechanism, either end of the plugger being adapted for connection with the coupling; substantially as described.

4. A dental plugger, provided at either end with means for attaching a plugger point, either end of the instrument being also adapted for connection with operating mechanism; substantially as described.

5. In a pneumatic dental plugger, the combination of a tubular barrel or body portion, a central tube provided at either end with means for attaching a plugger point, a hammer encircling the tube and sliding within the barrel, an air inlet near one end of the tube, an air outlet near the opposite end of the barrel, and a coupling for connecting either end of the plugger with an air compressor for forcing air into the tube; substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE A. FOSTER.
CHARLES E. HOFFMAN.

Witnesses:
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