(No Model.)

J. H. HEIVLY.

PNEUMATIC DENTAL PLUGGER.

No. 499,632. Patented June 13, 1893.

Fig. 2.

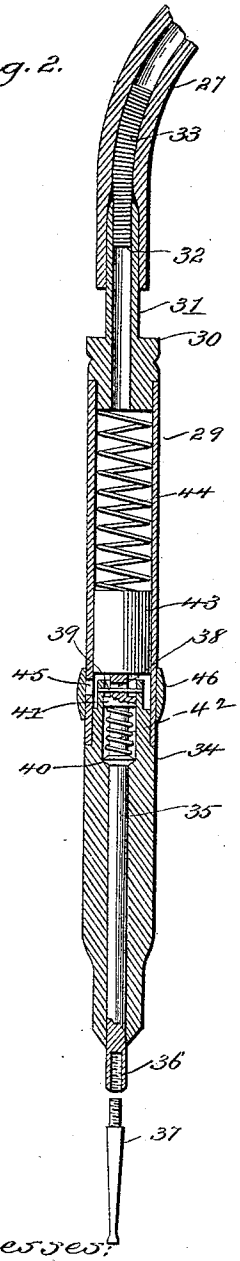


Fig. 1.

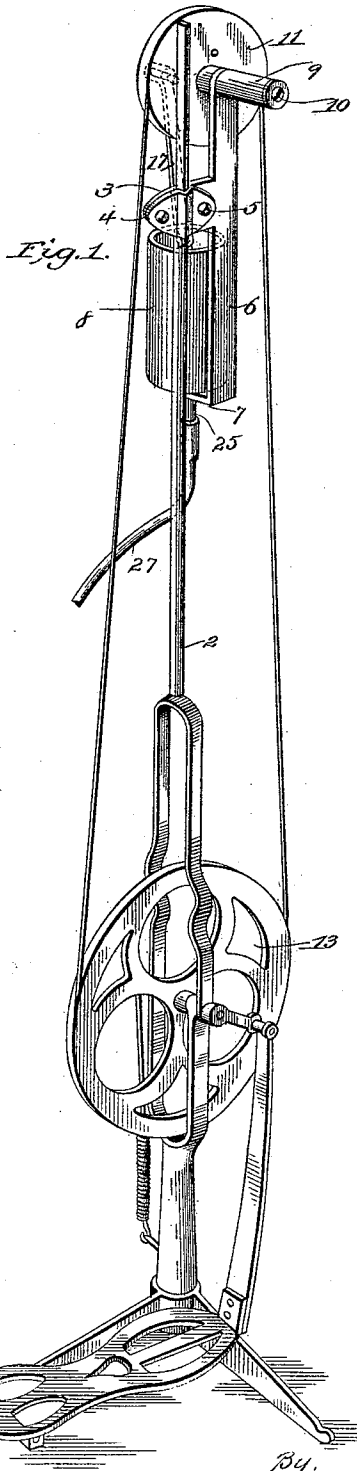


Fig. 3.

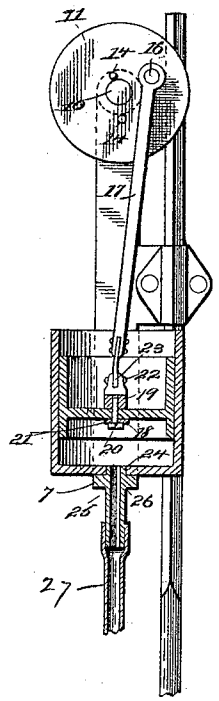
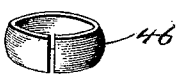


Fig. 4.



Witnesses:
Harry S. Rothwell.
Walter E. Allen.

Inventor
John H. Heivly
By, Knight Bros
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN H. HEIVLY, OF OIL CITY, PENNSYLVANIA.

PNEUMATIC DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 499,632, dated June 13, 1893.

Application filed October 3, 1892. Serial No. 447,629. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. HEIVLY, a citizen of the United States, residing at Oil City, in the county of Venango and State of Pennsylvania, have invented certain new and useful Improvements in Pneumatic Dental Pluggers, of which the following is a full, clear, and exact description.

My invention relates to that class of dental pluggers which are operated by the alternate compression and expansion of air; and my invention consists in features of novelty to be hereinafter described and then particularly pointed out in the claims.

In order that my invention may be fully understood, I will now proceed to describe the same with reference to the accompanying drawings, in which—

Figure 1 is a perspective view of a dental engine carrying my improved air-pump, with my improved plugger connected thereto by the usual flexible tubing. Fig. 2 is a longitudinal sectional view of the plugger extending partly through the tubing. Fig. 3 is a view of the air pump and its attached parts partly in elevation and partly in section. Fig. 4 is a perspective view of the valve closing ring.

Referring to the drawings 1 represents a dental engine of ordinary construction having a standard 2. Secured to the standard 2 by means of a rectangularly bent fixed piece 3 and rectangularly bent piece or clamping plate 4 and screws 5 passing through said pieces is a casting 6 having a horizontal arm 7 to which is secured the cylinder 8 of the air pump. Above said cylinder and journaled in tubular bearing piece 9 at the upper end of the casting is shaft 10 on which is fixed the peripherally grooved wheel 11 connected by belt 12 to the driving wheel 13 of the engine. The wheel 11 is provided with a series of screw threaded perforations 14, which are arranged eccentrically around the axis of the wheel, so that should the stroke of piston 15 be desired to be lengthened or shortened, it is only necessary to remove the attaching screw 16 of the connecting rod 17 from the perforation in which it is screwed and screw it into the required perforation.

Fixed in a central perforation 18 in the piston is a centrally screw-threaded cylindrical piece 19, screw 20 passing through the perforation in the piston from its opposite side and screwing into said cylindrical piece, between which screw 20 and the piston is placed a washer 21. A slitted extension 22 of the cylindrical piece 19 has riveted within it a flat spring metal plate 23 to which is riveted in turn the slitted end of the connecting rod 17. By using this metallic spring I am enabled to place the connection so as to bring the rod's action to the center of the piston.

Welded within perforations 24 in the base of the cylinder of the air pump is a short tube 25 which passes through a perforation 26 in the horizontal arm 7 of casting 6, onto which may be placed one end of flexible tubing 27, through which latter the pneumatic action of the air pump is communicated to the dental plugger 28.

The plugger proper is constructed as follows:—29 is a hollow cylindrical handle in which is fitted at one end a perforated plug 30 which has a short internally shouldered tube 31 extending therefrom. Onto this tube is placed the other end of flexible tube 27. Bearing against shoulder 32 of tube 31 is a spiral spring 33 which is long enough to occupy a portion of tubing 27. The occupancy of said tubing by said spring will prevent any abrupt bend in the former whereby the air passage might be closed and thus render the device inoperative. The other end of cylindrical handle 29 is internally screw-threaded, and into it is screwed the screw-threaded end of nose or nozzle 34, which latter is bored throughout its length, which bore or perforation is occupied by the reciprocating tool carrier 35, which is provided with a screw-threaded socket 36 within which is screwed the tool 37. Nose 34 is provided with a milled surface to enable it to be easily turned onto the handle.

The tool carrier 35 is provided at its upper end with an elongated eye or opening 38 through which and the screw-threaded end of nose 34 passes a screw 39. This elongated opening in the tool carrier permits a short reciprocating motion to the latter, when it is operated by means presently to be described. The bore of the nose is enlarged at its upper end, to provide a shoulder 40, between which latter and an enlargement 41 below the eye

of the tool carrier is situated a spiral spring 42, which forces the tool carrier back for engagement of the hammer 43 therewith, the end of the tool carrier projecting up from the screw threaded portion of the nose 34 to permit the engagement.

Hammer 43 is a solid cylinder which is alternately forced forward and backward within the cylindrical handle by the alternate compression and rarefication of the air behind it. Situated between the hammer and the plug 30 is a spiral spring 44, whereby the forward motion of the hammer is assisted, it imparting to the same with increased energy a rapid movement whereby a rapid elastic blow is transmitted to the tool carrier 35 and hence to the tool 37.

The handle is provided with a vent or valve 45 between the nose and the hammer for the escape of air. This vent may be closed entirely or the size of the opening may be regulated by means of a milled face ring 46 fitted loosely on the handle. If it is desired that the tool carried be given a light blow, this vent should be closed when the air confined will act as a cushion against the hammer. When the heaviest blow is required the vent should be entirely open. All parts of my device, excepting of course, the flexible tubing, are preferably constructed of metal.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The means for varying the speed of the tool of a dental plugger operated by an air pump, consisting of an eccentrically perforated wheel, the piston, and the connecting rod, substantially as set forth.

2. In combination with the piston of an air pump of a dental plugger, the operating wheel carrying a rod, and a metallic spring plate, connected with said rod, and the piston as and for the purpose set forth.

3. In a pneumatic dental plugger, the hollow handle provided with a vent, and a ring fitted loosely on the handle for regulating the vent opening, substantially as set forth.

JOHN H. HEIVLY.

Witnesses:
OCTAVIUS KNIGHT,
HERVEY S. KNIGHT.