(No Model.)

A. PELHAM.

PNEUMATIC DENTAL PLUGGER.

No. 566,220. Patented Aug. 18, 1896.

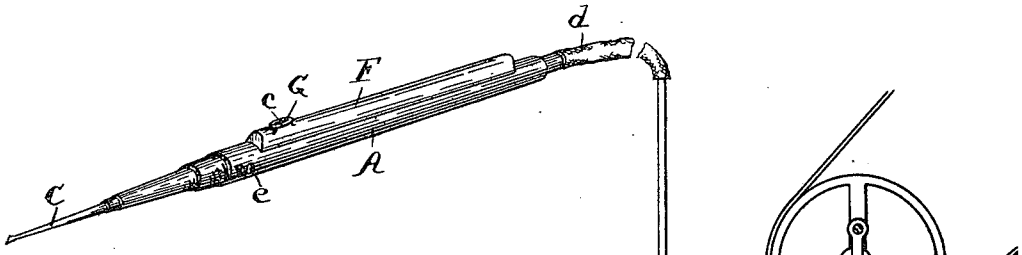

Fig. 1.

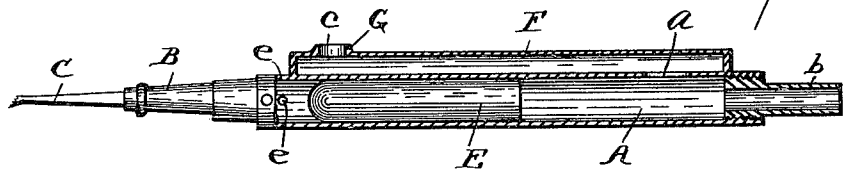

Fig. 2.

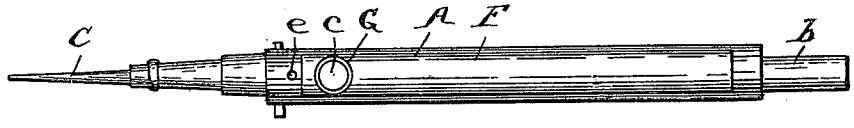

Fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

ABRAM PELHAM, OF PLYMOUTH, MICHIGAN, ASSIGNOR OF ONE-HALF TO ROSWELL L. ROOT, OF SAME PLACE.

PNEUMATIC DENTAL PLUGGER.

SPECIFICATION forming part of Letters Patent No. 566,220, dated August 18, 1896.

Application filed March 9, 1896. Serial No. 582,378. (No model.)

To all whom it may concern:

Be it known that I, ABRAM PELHAM, a citizen of the United States, residing at Plymouth, in the county of Wayne, State of Michigan, have invented certain new and useful Improvements in a Pneumatic Plugger for Dental Work; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a pneumatic plugger for dental work; and it consists of the construction and arrangement of parts hereinafter set forth, and pointed out particularly in the claims.

The particular kind of instrument to which this invention relates consists in a hollow cylindrical handle or body provided with a suitable chuck for holding the tool, by means of which the filling of a tooth is solidified or compact within the cavity, the cylindrical handle of the instrument having a plunger therein which is caused to travel back and forth in said cylinder by means of an alternating air current connected therewith, causing said plunger to reciprocate rapidly and imparting the impact of its blow through the end of the tool to the filling in the cavity of the tooth against which the tool is held. The objection to the ordinary instrument of this character is that immediately the alternating air-current is started the reciprocal plunger begins the operation of striking before the tool can be placed in position upon the filling where it is desired to deliver a blow. The vibration of the plunger renders it difficult for the operator to place the tool carefully in position, and the continual pounding of the plunger is annoying to the patient and conduces generally to unsatisfactory results. Besides, there are times when it is desirable to place the point of the tool upon the filling without striking a blow, to better place the filling in position; but with the continual vibration of the plunger this cannot be done. To overcome these objections and to provide a pneumatic plugger of such construction as to place the reciprocal plunger at all times under the control of the operator, so as to cause said plunger to operate only when desired, is the object of this invention, which object is attained by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a general view of my improved device, showing its connection with an air-pump, which may be of any suitable construction. Fig. 2 is an enlarged longitudinal section through the cylinder and exterior housing, the plunger in said cylinder appearing in elevation. Fig. 3 is an enlarged plan view of Fig. 2.

Referring to the letters of reference, A designates a cylinder having at its outer end a suitable chuck B, in which the tool C is secured. Communicating with the opposite end of the cylinder is a tube *b*, to which an air-hose *d* may be attached and which in turn communicates with an air-pump D of any suitable construction and adapted to run at a high rate of speed.

Located within the cylinder, and filling closely the diameter thereof, is a solid plunger E, which is adapted to reciprocate longitudinally of the cylinder when actuated by the alternating air-current.

Mounted upon the exterior of the cylinder is a housing F, which communicates with said cylinder only through an aperture *a*, formed in the wall of the cylinder near the upper end thereof, said housing being closed except at its lower end, where a vent-aperture *c* is located, which passes through a boss G, formed in the wall of said housing.

Formed in the lower end of the cylinder A are a series of vent-apertures *e*, through which the air is alternately drawn and expelled as said plunger is caused to reciprocate. The lower end of the plunger E is rounded, so that when lying at the bottom of the cylinder it does not close the air-vents *e*.

With the arrangement of parts as shown an operation of the pump D will cause an alternating air-current to pass through the air-hose *d*, which, being connected with the cylinder A, will cause a reciprocal air-current to pass into and out of the cylinder through the opening *a* and through the vent-opening *c* of

the housing F. These openings being of large area provide a free passage for the air which is driven from the pump by the downward stroke of the piston and afford ample passage for the return current of air, which passes backward through said openings to supply the vacuum caused by the upward stroke of said piston. Therefore, while the vent-opening *c* remains open, the operation of the pump does not move the plunger E within the cylinder, but immediately said vent-opening is closed the escape of air is cut off, so that the inflowing air-current will impinge upon said plunger and force it downward in the cylinder, so that it will strike with force upon the lower end thereof, imparting the impact of the blow to the filling of the tooth through the tool C. A reverse of the air-current will exhaust the air from said cylinder, causing the pressure of the air upon the lower end of the plunger, which enters the cylinder through the small openings *e*, to drive said plunger to the upper end of the cylinder, when a reverse current of air will again force said plunger downward, striking another blow upon the tool C, and so the plunger is caused to reciprocate by the action of the pump, which reciprocation may be made as rapid as desired.

When in the use of the instrument it is desired to cease striking for a time, the vent *c* is opened, which permits the air to pass to and from the pump through said opening and the opening *a*, the plunger E remaining stationary.

The vent-opening *c* is controlled by the finger of the operator and is located at such a point on the instrument as to enable the finger of the operator to be placed over or removed from said opening at will without changing the position of the hand, so that the tool may be used to place the filling in position in the cavity of the tooth, and when properly arranged it may be solidified therein through the operation of the plunger by closing the vent *c*, and at any time during the operation of filling the tooth the blows of the plunger may be caused to cease by simply raising the finger from the vent-opening *c*, making a plugger of universal utility and one by means of which a tooth may be quickly and perfectly filled.

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

1. In a pneumatic plugger, the combination of the cylinder carrying at one end the plugging or filling tool, and connected at the other end with an air-pump for creating an alternating current of air, the plunger in said cylinder, said cylinder having a vent-opening at its lower end below the end of said plunger, and a larger vent-opening at its upper end adapted to be closed by the hand of the operator.

2. In a pneumatic plugger, the combination of the cylinder, the tool attached thereto, said cylinder communicating with a pump for supplying an alternating air-current, and having a vent-opening at the lower end thereof, and a larger vent-opening at the upper end thereof, the housing embracing said opening in the upper end of the cylinder, said housing being closed and having a vent-opening only at its lower end, and the reciprocal plunger within said cylinder.

In testimony whereof I affix my signature in presence of two witnesses.

ABRAM PELHAM.

Witnesses:
H. W. BAKER,
F. B. PARK.