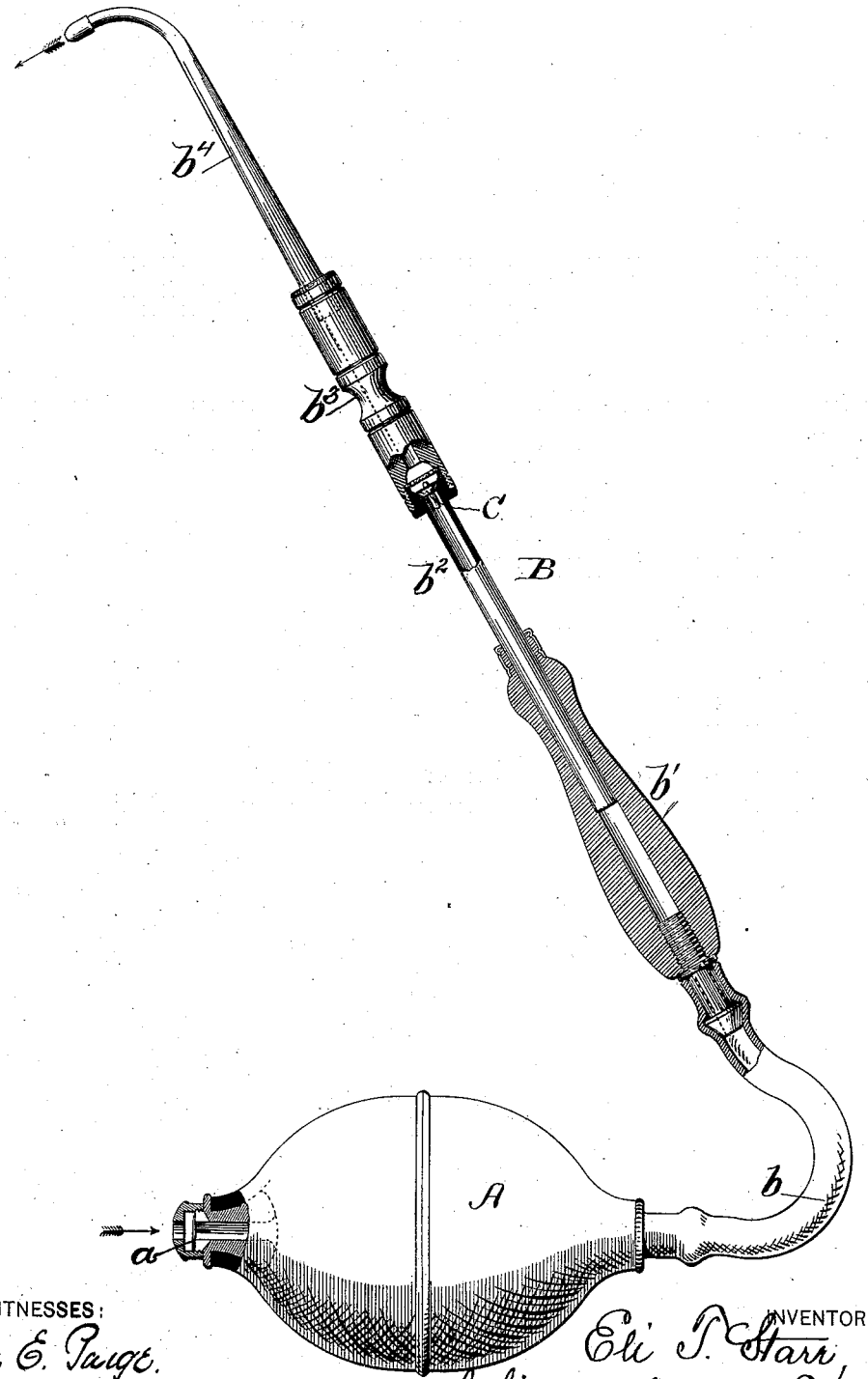
(No Model.)

E. T. STARR.

HOT AIR SYRINGE.

No. 382,012. Patented May 1, 1888.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ELI T. STARR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF SAME PLACE.

HOT-AIR SYRINGE.

SPECIFICATION forming part of Letters Patent No. 382,012, dated May 1, 1888.

Application filed February 13, 1888. Serial No. 263,821. (No model.)

To all whom it may concern:

Be it known that I, ELI T. STARR, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hot-Air Syringes; and I 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.

My invention relates to a hot-air syringe, more especially for dentists' use in drying out cavities of natural teeth in the mouth preparatory to filling them; and the object of my invention is to improve, simplify, and cheapen such devices, and to provide a more effective and certain apparatus.

The improvement claimed herein is particularly recited at the close of this specification.

The accompanying drawing shows a view in elevation, partly in section, of my improved syringe organized in the best way now known to me, the details of which may of course be varied.

The bulb A has an air-inlet valve, *a*, at its butt-end, and is fitted with a pipe-connection, B, at its front end, terminating in an injection-nozzle, through which the air is forced into the tooth-cavity to be dried after first being heated on its way through the pipe-connection when forced therethrough by compressing the bulb. This pipe-connection preferably consists of a flexible portion, *b*, (which may or may not be used,) connected with a hollow handle, *b'*, (which may be of wood or hard rubber, for example, so as to be a non-conductor of heat to the hand,) a portion, b^2, having a valve-seat for an outlet-valve, C, a heating-chamber, b^3, of thickened metal, so as to retain the heat, and an injection-nozzle, b^4.

In use the heating-chamber b^3 is subjected to the heat of a gas or lamp flame to heat it, and upon compression of the bulb the air taken in at the butt of the bulb is forced through the pipe-connection and out at the nozzle, being heated in its passage through the heating-chamber formed by the chamber-section b^3. When the bulb is compressed, the air-inlet valve is closed by the internal pressure and the valve C opened to permit of the passage of the contained air. When expanding to take in a fresh supply of air, the valve *a* opens, and the valve C closes, so as to prevent the entrance of the cold air from the nozzle end of the pipe.

This syringe in practice answers its purpose admirably, and the degree of heat to be imparted to the air passing through it depends upon the degree of heat imparted to the walls of the heating-chamber b^3 by the gas or lamp flame.

Before stating my claim it may be well to say that I do not claim every form of hot-air syringe, as several forms thereof are well known and have long been on the market; but none of them resemble or contain my improvement as set out above, and as summed up in the following claim, nor have any such mode of operation as that of my improved syringe. The prior devices all seem to be, moreover, single-valve syringes.

I claim as my invention—

The hot-air syringe consisting of the bulb, the inlet-valve thereof, the pipe-connection, the outlet-valve, and the heating-chamber, substantially as described.

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

ELI T. STARR.

Witnesses:

JAS. B. WILLIAMS,

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