(No Model.)

A. J. BURNS & H. C. REEVES.

DENTAL HOT AIR SYRINGE.

No. 559,511. Patented May 5, 1896.

Fig. 1.

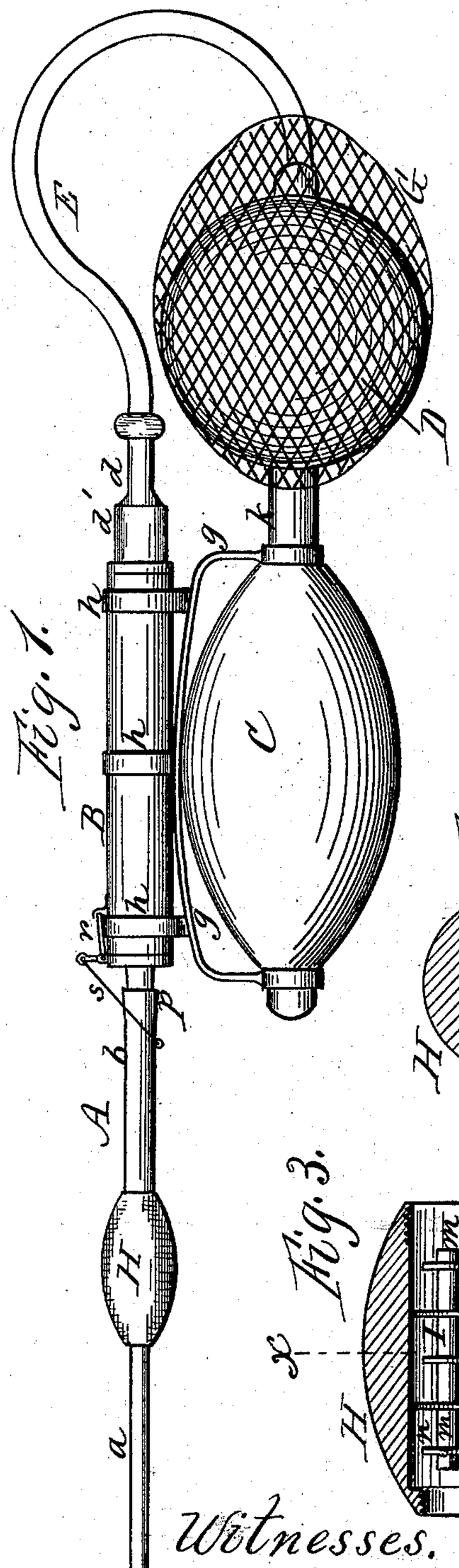

Fig. 2.

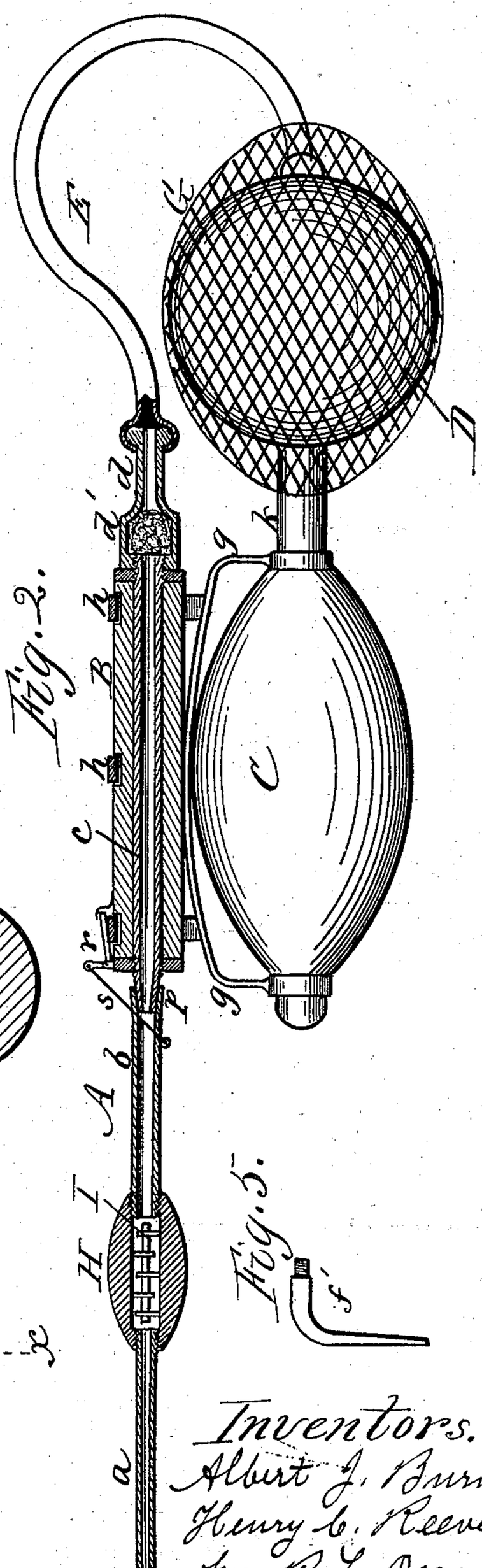

Fig. 4.

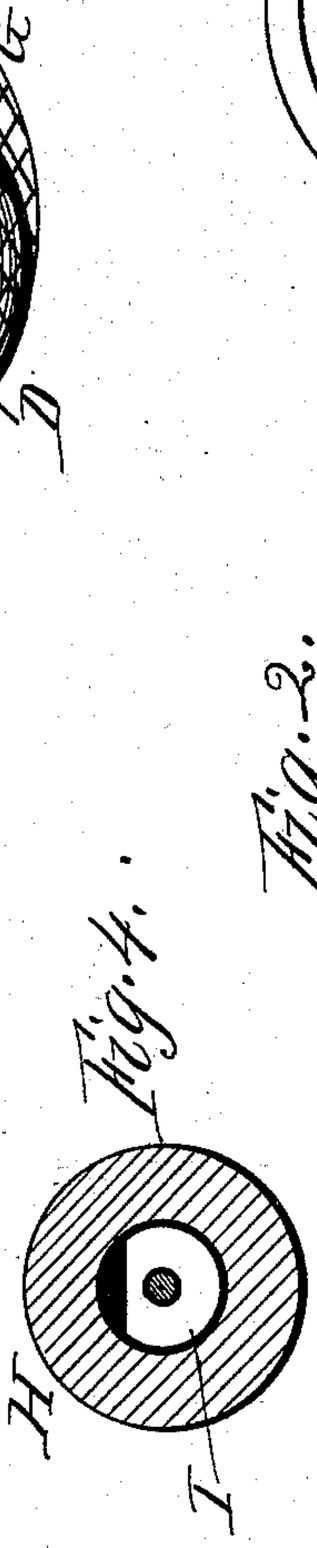

Fig. 3.

Fig. 5.

Witnesses.
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UNITED STATES PATENT OFFICE.

ALBERT J. BURNS AND HENRY C. REEVES, OF FAIRPORT, NEW YORK; SAID REEVES ASSIGNOR TO SAID BURNS.

DENTAL HOT-AIR SYRINGE.

SPECIFICATION forming part of Letters Patent No. 559,511, dated May 5, 1896.

Application filed January 4, 1894. Serial No. 495,726. (No model.)

To all whom it may concern:

Be it known that we, ALBERT J. BURNS and HENRY C. REEVES, of Fairport, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Hot-Air Syringes for Dentists' Uses; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the drawings accompanying this application.

Our improvement relates to syringes for blowing hot air into the cavities of teeth for the purpose of drying the same and preparing them for filling.

The invention consists in the construction and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of the instrument. Fig. 2 is a similar view, partially in section. Fig. 3 is an enlarged longitudinal section of the air-heating bulb. Fig. 4 is a cross-section of the same in line *x x* of Fig. 3. Fig. 5 is an elevation of one of the nozzles for blowing air deep into the nerve-cavities of teeth.

A indicates the main tube, through which the air is blown, the same being composed of several sections *a*, *b*, *c*, and *d*, suitably connected together and provided at the outer end with a curved nozzle *f* or *f'*, adapted to be inserted in the cavity of the tooth. Near the rear end a wooden or other handle B is placed around the tube-section *c* and supports the elastic bulb C, by which the air is blown. The bulb C is attached to a yoke *g*, and the latter is attached to the handle by means of rings *h h h*, which rest loosely around the handle. The elastic bulb can therefore be turned to any position around the handle and relatively to the discharge-nozzle for a purpose presently to be described.

D is a reserve chamber made of elastic material and connected with the bulb C by a tubular neck *k*, and E is a flexible tube connecting the reserve chamber with the rear end of the tube A.

G is a restraining-net placed around the reserve chamber to gage its expansive action and prevent rupture of the chamber.

H is a metallic heating-bulb interposed in the pipe in advance of the handle. It is made hollow, with thick walls to retain heat, and is provided on the inside with a removable air-distributer I, consisting of a shaft *m* and plates *n n*, alternately notched on opposite sides, as shown, whereby the air is passed in zigzag form through the bulb and held in close contact with the sides to obtain the maximum amount of heat therefrom. The tube-sections *b* and *c* are connected by a slip-joint, as shown at *p*. To the handle is attached a cranked lever *r* and to the section *b* a link *s*, connecting with the cranked lever. By this means the parts can be drawn tightly together or readily separated for heating the bulb or for other purposes.

When the instrument is to be used, the bulb H is heated over the flame of a lamp or otherwise, the nozzle is placed in the cavity of the tooth, and air is then forced through the tube by compressing the elastic bulb C. By a series of such compressions the reserve chamber D becomes distended and furnishes a uniform current through the instrument. The air in passing through the heating-bulb becomes heated to the proper degree. The nozzle *f'* is made fine pointed and of such length as to reach down into the nerve-cavity of the tooth.

The section *d* of the tube may be made with an enlargement at one end, forming a small chamber *d'*, in which medicated fiber may be placed.

By swiveling the elastic bulb to the handle, as described, the instrument can be operated by one hand and turned to different positions to fit the nozzle to different teeth without changing the grasp of the hand on the bulb.

In operating on upper and lower teeth the instrument has to be turned half-way around, and in operating on different teeth in the same jaw the position of the instrument has to be changed in various ways. Under all such conditions the bulb remains within convenient grasp of the hand.

Having described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the operating-handle, of an air-forcing bulb lying alongside the handle in close proximity thereto so that both can be grasped and operated by one

hand, and a yoke with connections fastening the bulb to the handle, as specified.

2. In a syringe, the combination, with the handle, of an air-forcing bulb lying alongside and in close proximity thereto, and a yoke to which the bulb is attached, said yoke provided with rings *h h* which turn on the handle, as described.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

A. J. BURNS.
H. C. REEVES.

Witnesses:
R. F. OSGOOD,
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