

F. HICKMAN.
Dental Drills.

No. 149,039.

Patented March 31, 1874.

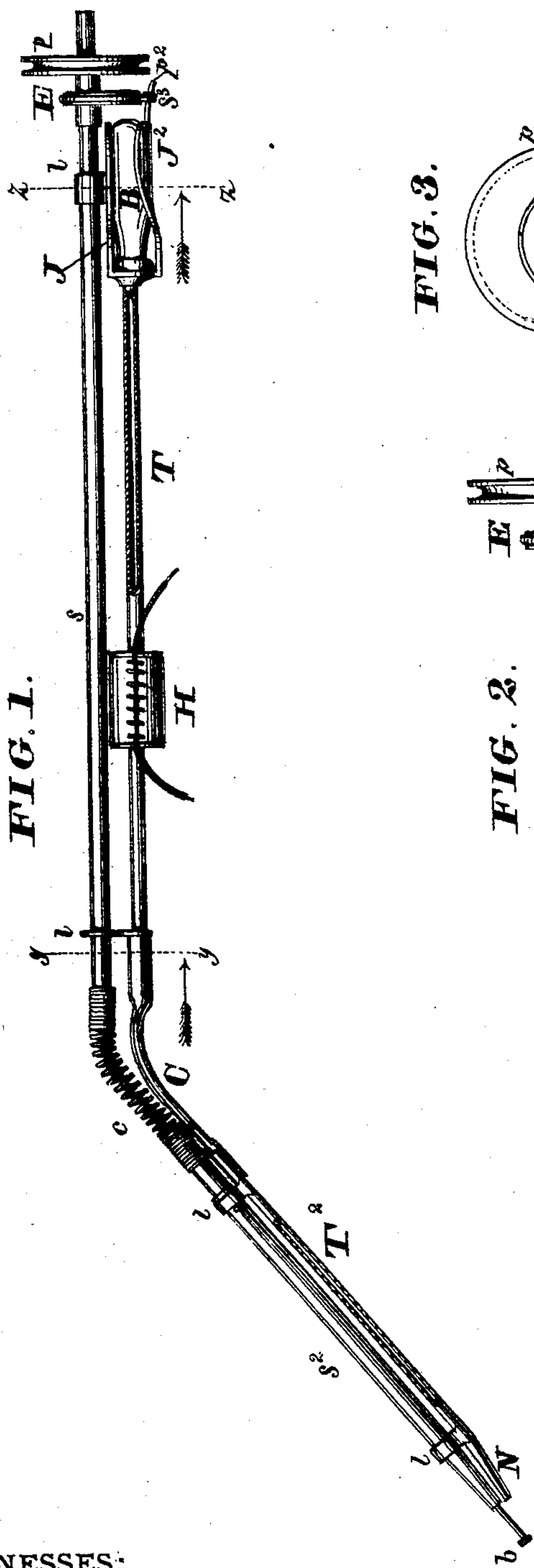


FIG. 3.

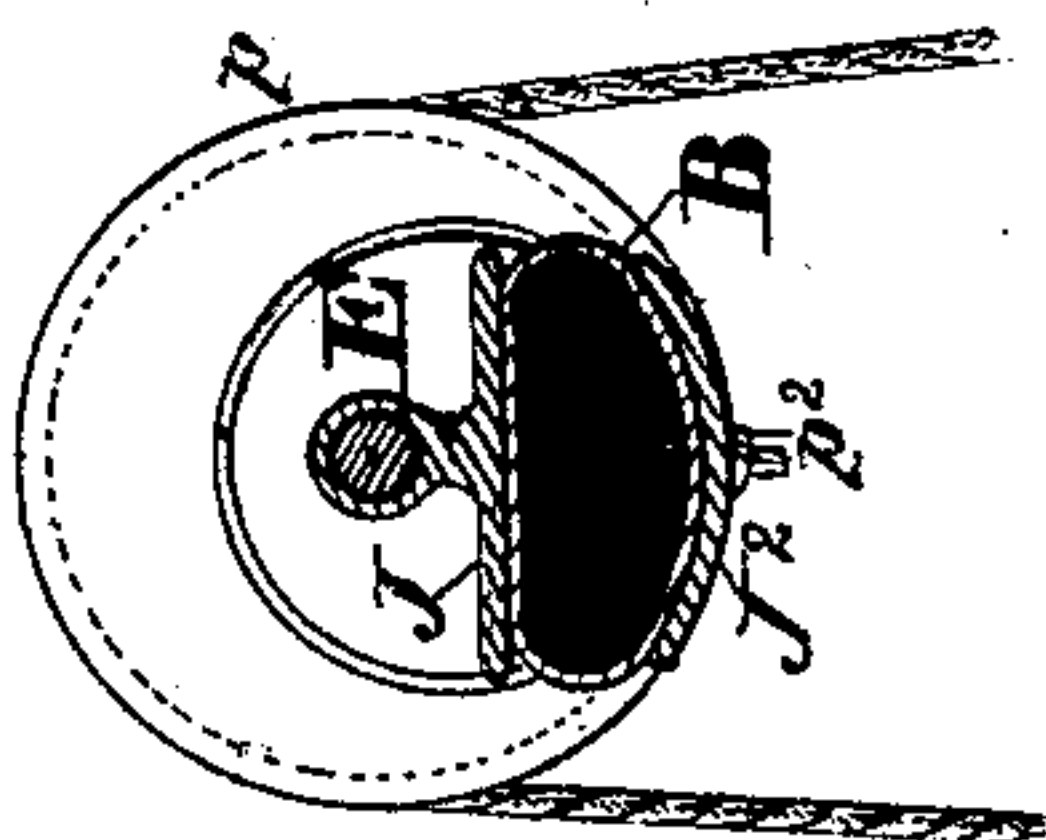


FIG. 2.

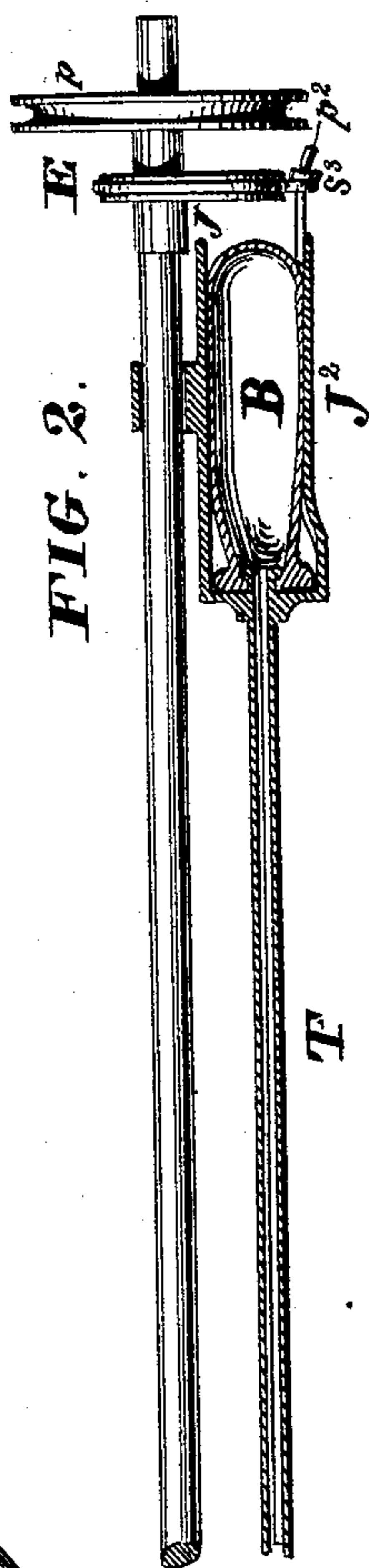


FIG. 5.

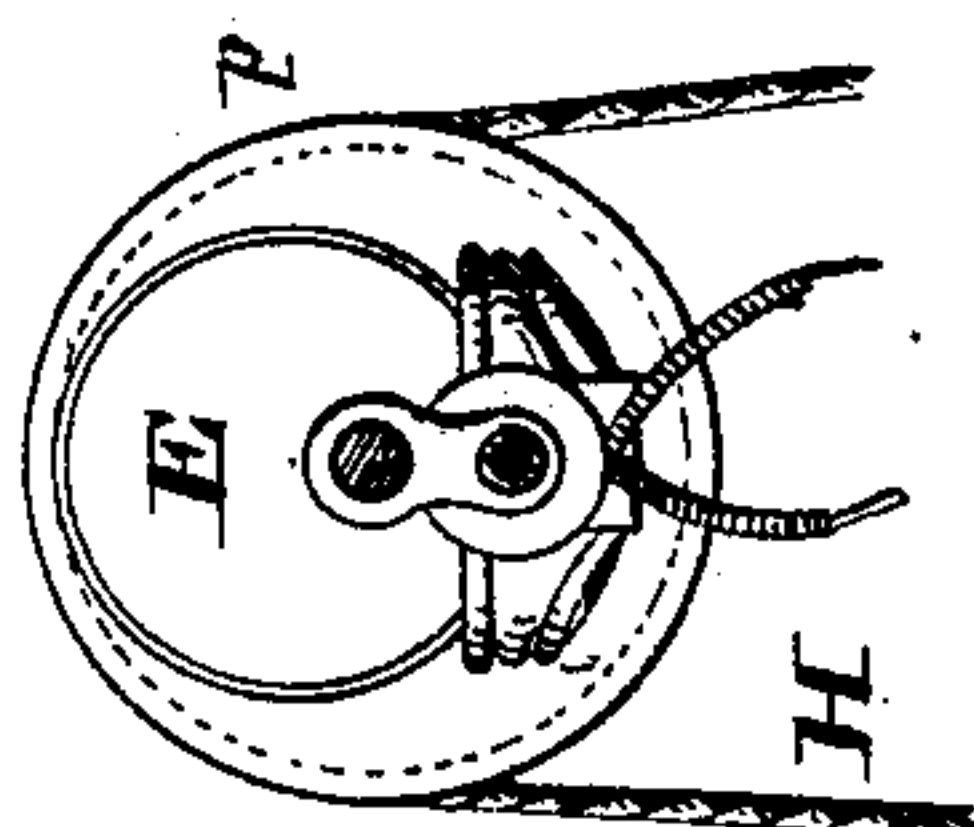
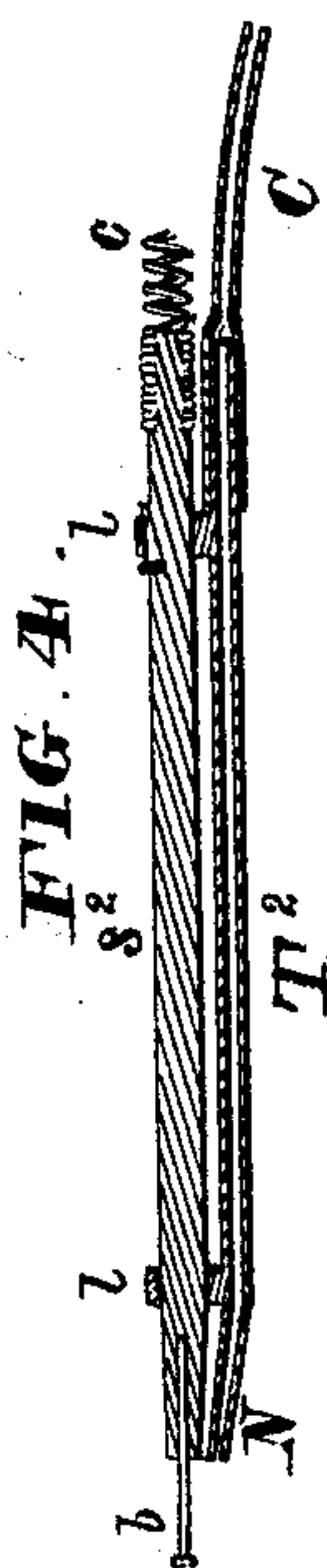


FIG. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANCIS HICKMAN, OF READING, PENNSYLVANIA.

IMPROVEMENT IN DENTAL DRILLS.

Specification forming part of Letters Patent No. 149,039, dated March 31, 1874; application filed July 25, 1873.

To all whom it may concern:

Be it known that I, FRANCIS HICKMAN, of Reading, in the county of Berks, Pennsylvania, have invented a new and useful Improvement in Dental Drills, of which the following is a specification:

This invention consists in a blowing attachment to dental drills by which a jet of air may be forced into the cavity of the tooth being operated on. The primary object is to eject the cuttings, but the jet of air serves also to keep the bit cool. A stationary nozzle is applied externally of the bit, so as to properly direct the jet of air. The air is supplied and forced by a bellows-bulb and a conducting-tube. In a dental-engine or machine drill the bulb is worked automatically by a simple apparatus driven by connection with the shafting. Warm air is preferably taken from the mouth to supply the jet; but the air may be heated, wholly or in part, by an electric coil enveloping a metallic portion of the air-tube.

The blowing attachment is applicable to hand-drills, as well as to dental engines or machine-drills.

Figure 1 is an elevation of a portion of a machine-drill having a blowing attachment applied thereto. Fig. 2 is a similar view on a larger scale, showing the blowing apparatus proper and a portion of the conducting-tube of the attachment in longitudinal section. Fig. 3 is a transverse section at $z z$, Fig. 1, on the same scale as Fig. 2. Fig. 4 is a longitudinal section, on the same scale, of the drill-stock and air-nozzle. Fig. 5 is a transverse section, on the same scale, at $y y$, Fig. 1.

The blowing attachment is illustrated as applied to a dental-engine or machine drill, of which $s s^2$ represent sections of the shafting; c , a flexible coupling uniting the same; p , a driving-pulley, and b the bit. The outer section of shafting s^2 constitutes the drill-stock. A nozzle, N , is formed and arranged so as to direct a jet of air upon and around the end or point of the bit b ; and tube-sections $T T^2$, united by a flexible tube-coupling, C , connect therewith. The flexible coupling C corresponds with that of the shafting. The nozzle N may be formed on the end of the outer tube-section T^2 , as in the illustration, or may be separate

and changeable. The nozzle and tube-sections are attached to the shaft-sections by loops or clips l in the illustration. In practice, they may preferably be arranged within or attached to the frame or casing of the shafting. In either case the combination and arrangement of the parts will be such as not to interfere with the motions of the shafting. Attached to the rear end of the tube is a bellows-bulb, B , and a pair of jaws, $J J^2$, for working the same. The bulb may be made of vulcanized caoutchouc, and, in the preferred form of the device, no valve is necessary. The jaws $J J^2$ may be formed of a single piece of elastic sheet metal. The outer end of the movable jaw J^2 is provided with a stem or projection, p^2 , which is engaged by the strap s^3 of an eccentric, E , applied to one of the sections of shafting.

Any preferred mechanical equivalent of this mechanism may be employed. The object is to work the bellows-bulb automatically by a connection with one of the moving parts of the machine-drill. A different form of blower may be employed. The bellows-bulb is represented as expanded in Figs. 1 and 3, and as compressed in Fig. 5.

In the apparatus, as above described, warm air is taken from the mouth of the patient to supply the jet. In order to give more heat to this air, or to warm cold air otherwise supplied, a metallic portion, T , of the air-conducting tube is enveloped by an electric heating-coil, H , of any approved construction.

The attachment is applicable to hand-drills, and as thus used may consist of a suitable nozzle and any simple blower, with or without the electric heater; and the latter may also be dispensed with in machine-drills.

The attachment operates to keep the tooth-cavity clear of cuttings in the most pleasant manner, and also to keep the bit cool while it is in use.

The following is claimed as new:

1. The combination, with the bit of a dental drill, of a nozzle for delivering a jet of air within the tooth-cavity, to clear the same and to cool the bit, this nozzle being stationary and applied externally of the bit, as herein described.

2. A blowing attachment for dental drills,

comprising a nozzle for receiving and delivering the air, a conducting-tube, and a bellows-bulb, substantially as herein set forth.

3. The eccentric E, straps s^3 , and jaws J J², operating substantially as described, in combination with the bellows-bulb B, for working the same from the shafting of a dental engine.

4. The electric heating-coil H, in combina-

tion with the air-conducting tube T T² of a blowing attachment for dental drills, substantially as herein described, for the purpose specified.

FRANCIS HICKMAN.

Witnesses:

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