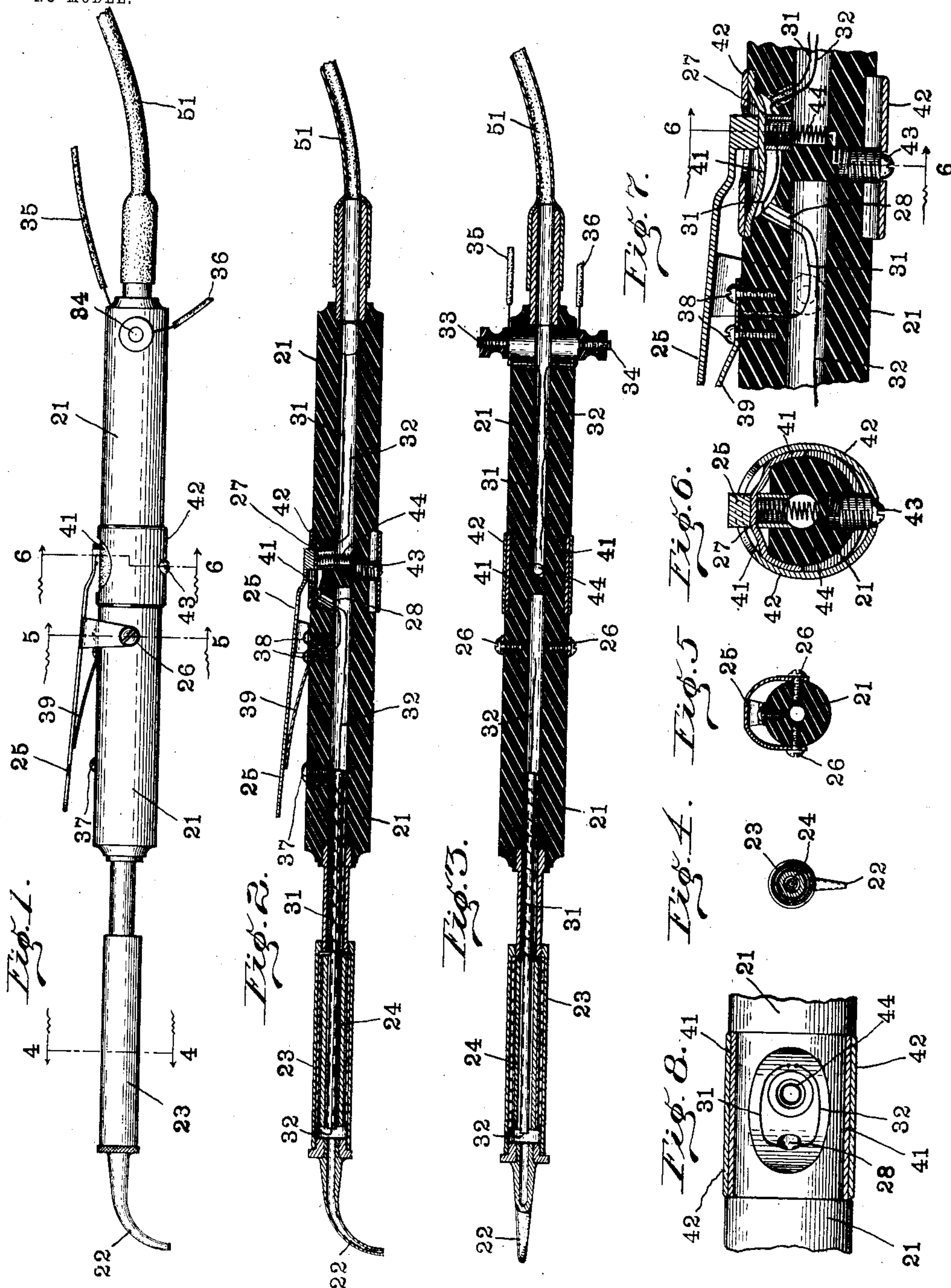


N. K. GARHART.
BLAST CONTROLLING DEVICE FOR DENTAL OR OTHER USES.

APPLICATION FILED APR. 17, 1903.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

NATHAN KLINE GARHART, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO
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BLAST-CONTROLLING DEVICE FOR DENTAL OR OTHER USES.

SPECIFICATION forming part of Letters Patent No. 742,305, dated October 27, 1903.

Application filed April 17, 1903. Serial No. 153,034. (No model.)

To all whom it may concern:

Be it known that I, NATHAN KLINE GARHART, a citizen of the United States, residing at Indianapolis, in the county of Marion and State
5 of Indiana, have invented certain new and useful Improvements in Blast-Controlling Devices for Dental or other Uses, of which the following is a specification.

This invention is designed to provide for
10 the convenient control of a blast of air and for the changing of the same at will from cold to hot or from hot to cold. It is especially useful in dental work where it is desired to supply a suitable small blast of air for the purpose of drying cavities and the like and also
15 for blowing away the fine particles resulting from drilling and other mechanical operations.

An apparatus embodying said invention
20 will be first fully described and the novel features thereof then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof and on which similar reference characters indicate similar
25 parts, Figure 1 is a side elevation of an apparatus embodying said invention with fragments of the air-supplying tube and of the electrical line-wires attached thereto; Figs. 2 and 3, central longitudinal sectional views
30 thereof; Figs. 4, 5, and 6, transverse sectional views on the dotted lines 4 4, 5 5, and 6 6, respectively, Fig. 6 being on an enlarged scale; Fig. 7, a detail view similar to a portion of Fig. 2, but on an enlarged scale; and Fig. 8,
35 a detail plan view at the valve-point with the shield broken away.

This instrument is composed of a tubular body or main portion 21, made of insulating material, a nozzle 22, leading therefrom, a
40 heating or resistance coil 24, contained therein, and an operating-lever 25. The ends of the heating or resistance coil are connected to conductors 31 and 32, which lead back through the body of the structure to the
45 binding-posts 33 and 34 and are there connected to the line-wires 35 and 36, which lead from any suitable source of electrical energy. (Not shown.) One of the conductors 31 is interrupted, one of the parts terminating in the
50 contact-point 37 and the other in a binding-

screw 38, to which I also prefer to connect a spring 39, which will form a part of the conductor when the circuit is completed. This spring also serves the further purpose of holding the lever 25 outwardly. The circuit is made, as
55 will be readily understood, by pressing down on the lever until either the spring or the lever strikes the contact 37. The circuit is broken by the action of the spring itself when pressure on the lever is released. Pressing the
60 lever down until this contact is made, therefore, will throw an electrical current through the heating or resistance coil, which is within the passage through which the air flows and is thus the means for heating the air. The
65 lever 25 is most conveniently mounted on the body 21 of the instrument by means of pivot-screws 26. The other end of the lever extends back over and serves to operate the air-valve. This air-valve I prefer to construct in the following manner: I shut off the
70 orifice through the body 21 of the instrument at an appropriate point and lead out a suitable escape-opening toward the side thereof, terminating in a valve-seat 27. In the side
75 of said body I make a chamber, and from this chamber a perforation 28 leads back into the longitudinal opening in the body of the instrument. I then preferably form a circumferential recess in the body of the instrument
80 and first lay into this, covering the chamber, a piece of thin flexible fabric 41, such as rubber or leather, which is adapted to be pressed down tightly onto the valve-seat surrounding the orifice leading out into the chamber
85 and to close the flow of air when desired. The valve-closing end of lever 25 is directly over this orifice. I slip over the flexible material a tubular metal shield 42, having an opening through which the valve-operating
90 end of the lever 25 can work. By means of a screw 43 I draw this shield tightly down onto the leather, making an air-tight connection around over the chamber in the body of the instrument. When the lever is at rest,
95 it (operated by the spring 39) will pass down on this soft flexible material, which serves as the air-valve and keeps the orifice closed. When the other end of the lever is pressed down and force thus removed from the flexi- 100

ble material, the pressure of air beneath will force it up off the valve-seat, permitting the air to flow into the chamber in the body of the instrument, and thence through the perforation described out toward the heating-chamber and the discharging end of the instrument. In order that this flexible material shall not have a tendency to stick to the valve, I mount in or around the orifice a small coiled spring 44.

In operation I proceed as follows: The air is supplied from any ordinary or convenient source, as through a flexible tube 51. Its pressure, however, is not sufficient to overcome the pressure of the spring-operated lever on the valve. When, however, the lever is pressed down slightly, the air will flow through, as has been described. The lever need not (for this purpose) be pressed down far enough to make the electrical contact described. So long as the lever is held in an intermediate position there will be a flow of cold air of the temperature at the source of supply. When, however, it is desired to heat the air, it is pressed down a little farther until the electrical contact is made, when the heating or resistance coil will come into operation and heat it, as will be readily understood. There is no danger of leaving the heating-coil in operation after the air is shut off, as the first movement of the lever upwardly under the force of the spring breaks the electrical contact, so that the current of electricity is shut off before the supply of air is shut off. This is of great advantage, as were it otherwise great care would have to be taken else the delicate resistance-coil employed for this work would be in danger of being burned out. As I have it arranged, the air necessarily is flowing through it and carrying away the heat as long as the circuit remains unbroken.

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

1. A dental tool consisting of a hollow body capable of use in one hand, an electric heating-coil mounted therein, a valve controlling the passage through said body and the coil, a switch forming part of the coil-circuit, and a swinging finger-lever for operating both the valve and the switch, for the purpose set forth.

2. In a dental tool, the combination of a hollow body, a valve in the passage thereof consisting of a flexible membrane arranged above an orifice within a chamber, means for holding said membrane tightly around the edges of said chamber, a lever whose end is arranged above the valve-seat and adapted to press the membrane down onto said seat and close the valve, and a spring whereby said lever is operated to hold the valve in closed position, substantially as set forth.

3. In a dental tool, the combination of a tube containing a chamber, a valve-seat in said chamber, a flexible valve over said valve-seat, a spring-pressed closer for said valve, and a spring below said flexible valve for raising the same when the pressure on the closer is released.

4. A dental hand-tool consisting of a non-conducting body having a valved air-passage therethrough, the said valve, an electric heating-coil carried by said body at its forward end and connecting with the air-passage thereof, the circuit-wires therefor, a switch forming part of said circuit, a nozzle at the forward end of said coil and a swinging finger-lever for operating the valve and the switch, substantially as and for the purpose set forth.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 13th day of April, A. D. 1903.

NATHAN KLINE GARHART. [L. S.]

Witnesses:

ARTHUR M. HOOD,
JAMES A. WALSH.