(No Model.)

H. WILSON.

THERMOCAUTER.

No. 517,180. Patented Mar. 27, 1894.

Fig. 1.

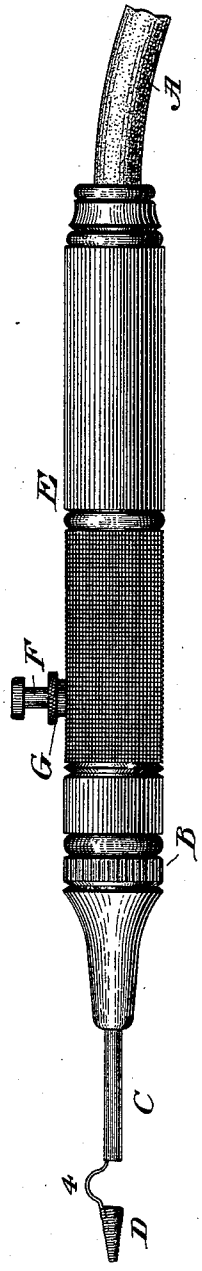
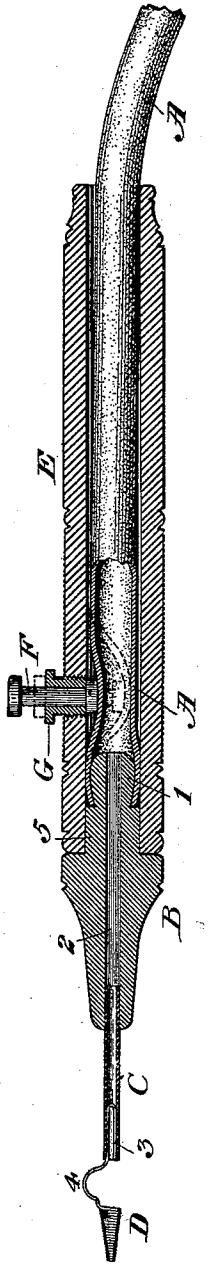


Fig. 2.



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THERMOCAUTER.

SPECIFICATION forming part of Letters Patent No. 517,180, dated March 27, 1894.

Application filed May 1, 1893. Serial No. 472,637. (No model.)

To all whom it may concern:

Be it known that I, HAROLD WILSON, a citizen of the United States of America, and a resident of Detroit, in the State of Michigan, have invented a new and useful Improvement in Cauteries, of which the following is a specification.

This invention relates to actual cauteries, and consists in one of novel construction for the practice of thermo-cautery by means of common illuminating gas. This improved cautery is primarily designed for cauterizing the eye or eye-lids, but is applicable to other delicate cauterizing operations which would not be materially interfered with by a minute escape of the gas.

A sheet of drawings accompanies this specification as part thereof.

Figure 1 of the drawings is a side elevation of a cautery constructed according to this invention, and Fig. 2 is a longitudinal section thereof, partly in elevation, illustrating by dotted lines the control of the heat.

Like reference letters and numbers refer to like parts in both figures.

A conductor for illuminating gas, in the form of a small flexible tube A, is coupled to a bulb 1 at the rear end of a head-piece B, of hard-rubber or the like, which is provided with a bore 2 leading from said bulb to its other extremity; a small metallic nozzle C is tightly fitted to the outer end of said bore 2, projecting therefrom half an inch, more or less; and the cauterizing tip, D, is attached by means of a rear terminal 3 and a connecting bow 4 to the outer end of said nozzle. Said tip D is composed of fine non-corrodible wire, preferably of platinum or a platinum alloy. The tip proper is supported in line with the bore of said head B and nozzle C, being preferably in the form of a close conical coil open at both ends, with the larger end toward the nozzle, and with said terminal 3 and bow 4 in continuation of the wire at this end of the tip. By bending the bow 4 more or less the tip may be adjusted endwise toward or away from the nozzle-end. The terminal 3 may be simply forced endwise into the bore of the nozzle C, or screwed in, or soldered fast. A tubular hand-piece E of hard-rubber or the like, fitted at one end to a neck 5 on said head B, loosely incloses the gas tube A, and is provided with a device F for cutting off the flow of gas, in the form of a little plunger having buttons at both ends, and with a regulating device G for determining the flow of gas; the latter being in the form of a hollow screw with a milled rim at its outer end, forming an adjustable sleeve around the plunger F between its buttons.

The flexible gas-conductor A having been connected with a gas-burner, the tip D is preliminarily heated to redness by allowing a stream of gas to flow out upon the tip, and igniting the gas, preferably by the flame of a small alcohol lamp. The tip is then removed from the lamp-flame, and the flow of gas is cut off for an instant, by pressing on the plunger F, to extinguish its flame. Pressure on the plunger is then relaxed; the tip immediately glows under the impact of the gas, and it is thereby maintained at the required temperature as long as may be necessary, the flow of gas being regulated with the requisite nicety by means of the screw regulator G. The invisible combustion of gas, which takes place in contact with the heated wire, and maintains its heat, is freely supplied with oxygen from the air which surrounds the tip.

The shape of the tip D may be changed to any suitable form that can be produced by coiling, bending or weaving the wire; the tip may be attached to the nozzle C by any approved means; and other like modifications will suggest themselves to those skilled in the art.

The hollow tips of Paquelin's and other like "thermocauters" are of sheet platinum, and are closed at their points, and heated as a rule by internal jets of benzine vapor or carbureted air, requiring special and expensive means for its introduction, and further requiring on the part of the operator his attention to a pumping operation which is wholly dispensed with in my improved cautery. It has been proposed to heat such tips by means of coal gas oxygenated and projected by means of jets of compressed air, and in the thermocauter set forth in Patent No. 203,387 an internal "coil or helix of platina wire," at the end of the internal jet tube, becomes "intensely heated" to assist in heating a tip of

sheet-platinum; but so far as I am aware it has never before been known that a coil or the like of wire sufficiently strong to form the tip of a cautery could be heated in the manner hereinbefore set forth; nor that a cauterizing tip of any description could be so heated by common illuminating gas alone; and a thermocauter constructed on this principle is of great usefulness, and of much less cost than those heretofore employed.

Having thus described the said improvement, I claim as my invention and desire to patent under this specification—

1. The combination with a flexible conductor for common illuminating gas of a head-piece having a bore which is provided with a metallic nozzle, and a cauterizing tip of fine wire supported in front of said nozzle, substantially as hereinbefore specified.

2. The combination of a flexible conductor for illuminating gas in the form of a compressible tube, a head-piece to which said tube is coupled and which is provided with a metallic nozzle, a cauterizing tip of fine wire supported in front of said nozzle, and a hand-piece coupled to said head-piece and inclosing said tube behind the same, substantially as hereinbefore specified.

3. The combination of a flexible conductor for illuminating gas in the form of a compressible tube, a head-piece having a bulb at its rear end to coact with said tube and a neck adjoining said bulb, a metallic nozzle projecting at the opposite extremity of the head, a cauterizing tip of fine wire supported in front of said nozzle, a rearwardly projecting hand-piece fitted to said neck, and a flow-controlling plunger supported by said hand-piece and coacting with said tube, substantially as hereinbefore specified.

4. In an instrument for use in thermo-cautery, a cauterizing tip of suitable metallic wire in the form of a close conical coil, in combination with a gas-escape nozzle behind and in line longitudinally with the axis of said coil, substantially as hereinbefore specified.

5. An instrument for the practice of thermo-cautery by means of common illuminating gas, comprising a cauterizing tip of fine wire, a gas-escape nozzle behind and in line with said tip, a flexible gas-conductor in the form of a compressible tube, and a screw-regulator coacting with said tube to determine the temperature of the tip by regulating the flow of the gas, substantially as hereinbefore specified.

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