

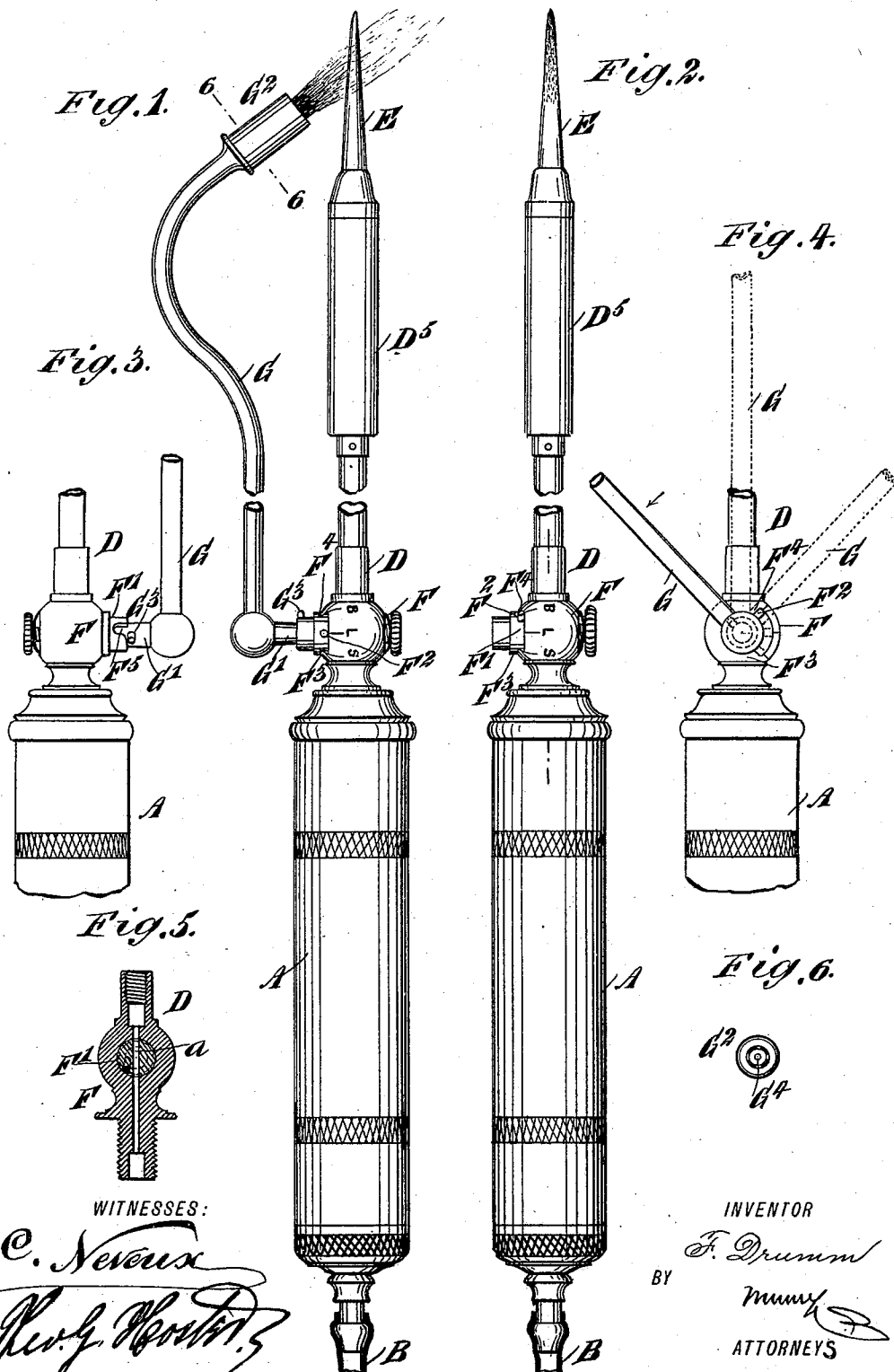
(No Model.)

2 Sheets—Sheet 1.

F. DRUMM.
THERMOCAUTER.

No. 574,719.

Patented Jan. 5, 1897.



WITNESSES:

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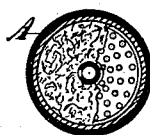
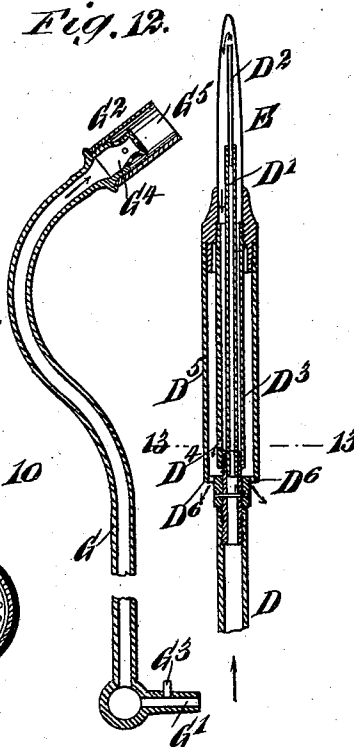
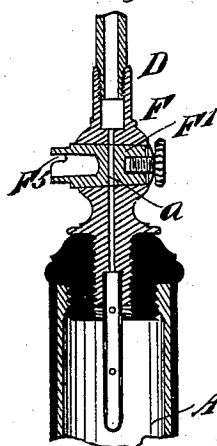
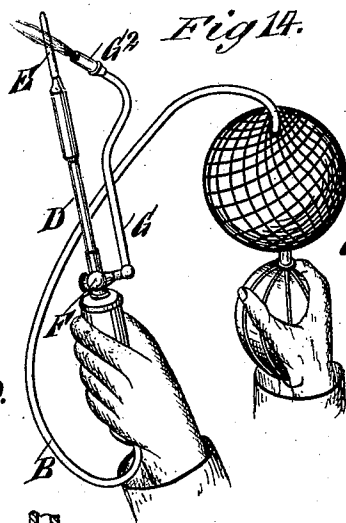
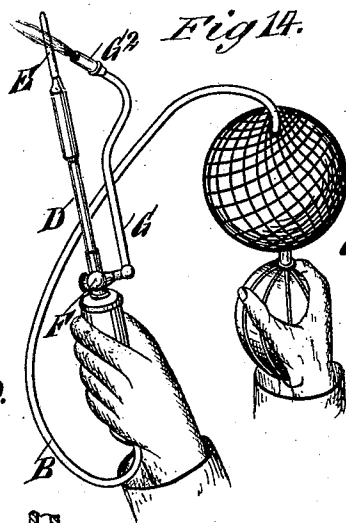
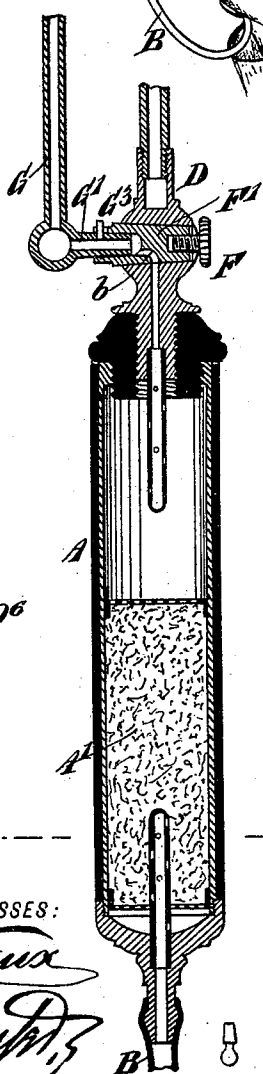
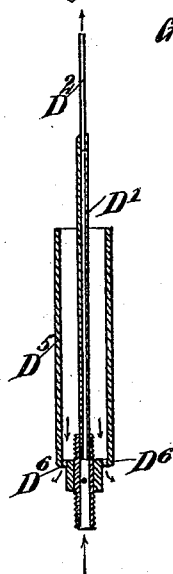
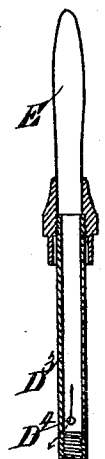
(No Model.)

2 Sheets—Sheet 2.

F. DRUMM.
THERMOCAUTER.

No. 574,719

Patented Jan. 5, 1897.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRIEDRICH DRUMM, OF NEW YORK, N. Y.

THERMOCAUTER.

SPECIFICATION forming part of Letters Patent No. 574,719, dated January 5, 1897.

Application filed January 10, 1896. Serial No. 574,998. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH DRUMM, of New York city, in the county and State of New York, have invented a new and Improved Thermocauter, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved thermocauter which is simple and durable in construction, very effective in operation, and arranged to permit the operator to conveniently heat the cauterizing-tool externally when starting the apparatus.

The invention consists principally of an auxiliary burner adapted to be connected with a gas-supply for the cauterizing-tool.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement, showing the auxiliary burner in position for heating the tool. Fig. 2 is a like view of the same with the auxiliary burner removed and the tool heated internally. Fig. 3 is a rear side elevation of part of the improvement, showing the means for disconnecting the auxiliary burner from the supply-pipe valve. Fig. 4 is a face view of part of the improvement, indicating the several positions of the burner. Fig. 5 is a sectional side elevation of the valve. Fig. 6 is a cross-section of the auxiliary burner on the line 6 6 of Fig. 1. Fig. 7 is a sectional side elevation of the point and adjacent part. Fig. 8 is a like view of the upper end of the gas-supply pipe and the combustion-shell. Fig. 9 is a sectional side elevation of the gas-generator, the auxiliary burner, and the supply-pipe, with the valve in position for connecting the generator with the auxiliary burner. Fig. 10 is a sectional plan view of the generator on the line 10 10 of Fig. 9. Fig. 11 is a sectional side elevation of part of the generator and supply-pipe, with the valve in position for connecting the generator and supply-pipe. Fig. 12 is a sectional side elevation of the point,

internal burner for the same, and the auxiliary burner. Fig. 13 is a sectional plan view of the internal burner on the line 13 13 of Fig. 12; and Fig. 14 is a reduced perspective view of the improvement, showing the auxiliary burner in action.

The improved thermocauter is provided with a suitably-constructed gas-generator A for generating the gas and heating the cauterizing-tool externally and internally, as hereinafter more fully described. The generator A forms the handle for the instrument and is preferably filled in its lower portion with cotton or like loose material, saturated with benzene or like liquid for producing an inflammable gas. The lower end of the generator A is connected by a rubber tube B with air-bulbs C, of the usual construction, to permit of forcing a continuous stream of air through the generator and the saturated material to produce the desired inflammable gas in the upper portion of the generator A. The gas thus generated is passed from the upper end of the generator into a gas-supply pipe D, supporting at its extreme upper end the cauterizing-tool E, made hollow and preferably of platinum or like material, the shape of the tool varying according to the intended use.

In the lower end of the supply-pipe D and next to the generator A is arranged a two-way valve F, adapted to connect and disconnect the generator A with and from the supply-pipe D and connect and disconnect the generator A with and from an auxiliary burner G for externally heating the tool E in starting the apparatus.

The valve F is provided with a valve-plug F', formed with two ports or channels *a* and *b*, of which the port *a* extends diametrically and serves to establish communication between the generator A and the upper end of the supply-pipe D. (See Fig. 5.) The other port *b* (see Fig. 9) is adapted to connect the interior of the generator A with a conical branch G', forming part of the lower end of the rigid pipe forming the auxiliary burner G, and this branch G' is adapted to positively connect with the plug F', so as to turn the latter from a closed position to the position shown in Figs. 5 and 9, and finally to the po-

sition shown in Fig. 2, to establish communication between the generator A and the upper end of the supply-pipe D, as shown in Fig. 5.

On the plug F' is secured a stop F², adapted 5 to abut against two shoulders F³ and F⁴ on the casing for the valve F to limit the motion of the plug F', the latter being further provided at its outer end with a recess F⁵, adapted to be engaged by a pin G³, formed on the branch 10 G', (see Fig. 3,) so that when the said pin is in position then the operator in turning the burner G can impart a turning motion to the plug F' by said pin G³. The forward wall of the recess F⁵ is curved near its outer end, as 15 is plainly illustrated in Fig. 3, so that when the operator turns the auxiliary burner G into the uppermost position (shown in Fig. 5) then the pin F² finally rests against the shoulder F⁴ to prevent a further movement of the plug F' and the pin G³. On a further pushing on 20 the burner G the pin G³ lights off the curved wall of the recess F⁵, so that the branch G' is moved out of engagement with the plug F'.

On the extreme upper end of the pipe forming the auxiliary burner G is held a burner G², preferably provided with a perforated tip G⁴ and a shell G⁵, surrounding the tube, as is plainly shown in Fig. 12. This shell G⁵ extends with its open end in close proximity to 30 the cauterizing-tool E at the time the auxiliary burner G is in the position illustrated in Fig. 1—that is, at the time it is desired to externally heat the cauterizing-tool E.

The internal burner for the cauterizing-tool 35 E is preferably of the construction shown in detail in Figs. 7, 8, and 12, said external burner being provided with a tube D', secured to the upper end of the supply-pipe D, and on the extreme upper end of this tube D' is 40 secured an attenuated tube D², extending within the cauterizing-tool E without touching the walls thereof. The tube D' is surrounded by a return-pipe D³, which in turn is inclosed within a shell D⁵, forming an outlet for the 45 products of combustion, it being understood that the lower end of the pipe D³ is connected by an opening D⁴ with the space between the shell D⁵ and the pipe D³. In the bottom of the shell D⁵ are arranged outwardly-extending 50 openings D⁶ for carrying the products of combustion to the outer air.

The operation is as follows: In starting the apparatus the operator places the branch G' of the auxiliary burner in engagement with 55 the valve-plug F', as previously explained, the valve-plug then being in a closed position; that is, with its pin F² resting against the shoulder F³. The operator now manipulates the air-bulb C, so as to generate a gas in the 60 generator A, as previously explained, and then the operator, having hold of the generator A with one hand, turns the auxiliary burner G with one finger of said hand, so as to bring the burner G² in proper alinement and close 65 to the cauterizing-tool E, the pin F² then standing in a central position; that is, between the shoulders F³ and F⁴, as plainly indicated

in Fig. 1. The gas from the generator A now passes through the valve F into the branch G' and the pipe of the auxiliary burner, to finally 70 issue through the tube G⁴ into the shell G⁵ in which the inflammable gas is ignited. The flame thus produced is directed against the hollow cauterizing-tool E, so as to heat the latter externally, and when the tool has a red 75 heat then the operator turns the auxiliary burner still further, so as to move the valve-plug F' into the position shown in Fig. 5—that is, to connect the generator A with the upper end of the supply-pipe D. A further pres- 80 sure on the burner G disconnects the latter from the valve-plug F', owing to the pin G³ traveling on the curved wall of the recess F⁵, as previously explained. Now by the operator keeping up the flow of air by manipulating 85 the bulb C more gas is generated in the generator A, and this gas passing through the valve F into the supply-pipe D finally issues through the attenuated tube D² into the interior of the red-hot cauterizing-tool E, so 90 that the gas is ignited and burned within the cauterizing-tool, and consequently the latter is heated to a white heat. The products of combustion of this internal burner pass through the pipe D³ and opening D⁴ into the 95 shell D⁵ and through the openings D⁶ to the outer air. Thus it will be seen that by the operator manipulating the bulb C the cauterizing-tool E can be kept at the desired temperature for cauterizing purposes as long as 100 desired.

It is understood that by the arrangement described the gas from the generator is utilized both for externally heating the cauterizing-tool E when starting the apparatus and 105 for supplying the internal burner of the cauterizing-tool with the necessary amount of gas to keep the cauterizing-tool at the desired temperature during the operation.

Having thus fully described my invention, 110 I claim as new and desire to secure by Letters Patent—

1. A thermocauter, comprising a point and a gas-generator, an auxiliary burner for heating the point arranged to be swung into and 115 out of operative position, a rigid gas connection between the auxiliary burner and the gas-generator, and a valve controlling said gas connection and controlled by the swinging of the auxiliary burner into and out of opera- 120 tive position, substantially as set forth.

2. In a thermocauter, the combination of a point adapted for use as a burner, a gas-generator, a rigid gas connection between the generator and the point, an auxiliary heating 125 device for the burner arranged to be swung into and out of operative position, and a valve controlling the gas connection between the generator and the point and controlled by the swinging of said auxiliary burner into and 130 out of operative position, substantially as set forth.

3. In a thermocauter, the combination of a gas-generator, a point adapted for use as a

burner, a gas connection between the generator and the point, a valve-casing in the said connection, a valve mounted in the casing and controlling the flow of gas from the generator
5 to the point, a rigid gas-pipe extending from the valve, passages formed in the valve adapted to communicate between said gas-pipe and the gas-generator when the valve is turned to cut off the flow of gas from the generator to
10 the point, and an auxiliary burner carried on said gas-pipe and arranged to direct a flame against the point when the pipe stands in one position, said pipe being adapted when moved, to swing the burner out of operative position
15 to turn the valve to cut off the flow of gas from the generator to said gas-pipe, and to open the communication between the generator and the point, substantially as set forth.

4. A thermocauter, comprising a gas-supply pipe, a hollow point supported thereon,
20 an attenuated tube forming the terminal of

said supply-pipe and extending into the hollow of said point, and a return-pipe connected with the point and arranged to surround said supply-pipe, substantially as set forth. 25

5. A thermocauter, comprising a supply-pipe, a hollow point supported thereon, an attenuated tube forming the terminal of said supply-pipe and extending into the hollow of
30 said point, a return-pipe connected with the hollow of the point and surrounding the supply-pipe and provided with perforations, and a casing secured at one end to the burner and extending rearwardly therefrom, said casing
35 being arranged to surround the return-pipe and having its rear end open, substantially as set forth.

FRIEDRICH DRUMM.

Witnesses:

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JNO. M. RITTER.