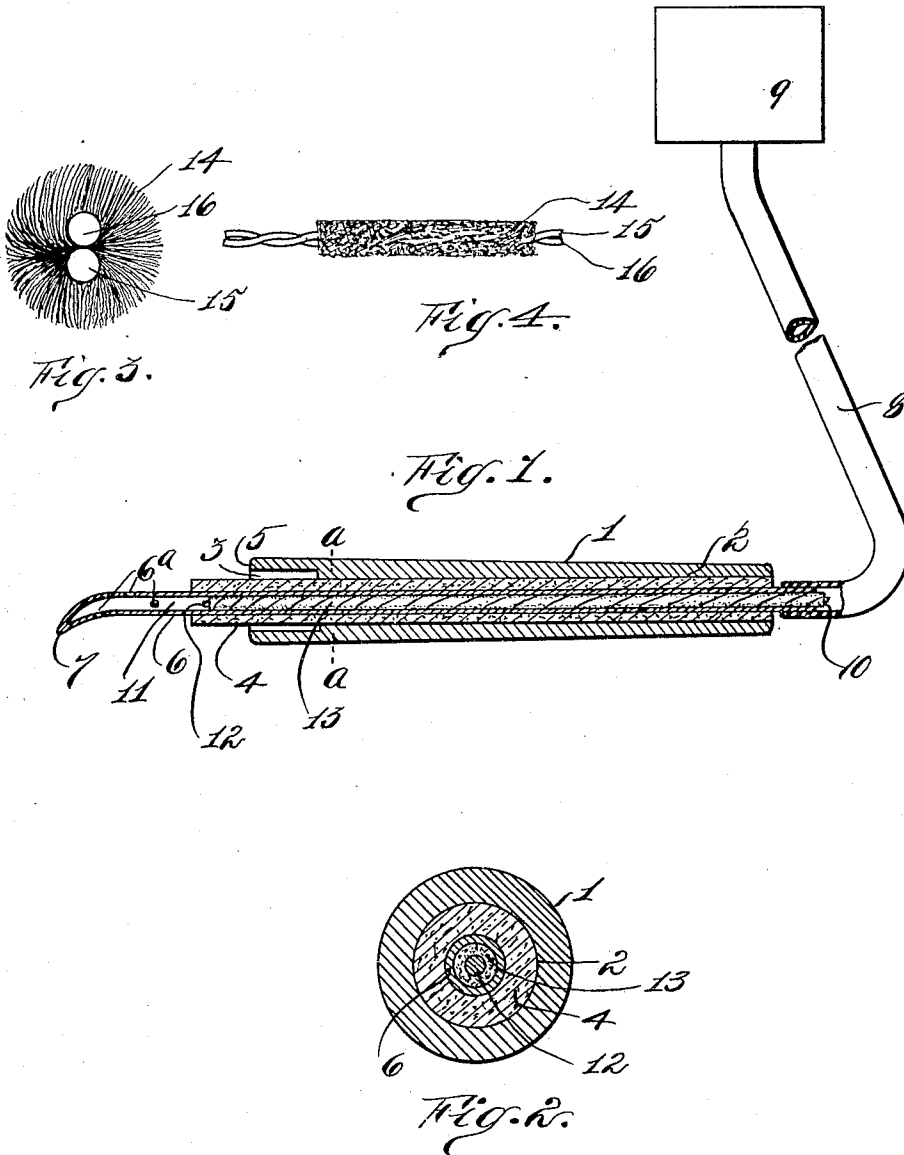


E. H. E. MALMQUIST.  
PYROGRAPHICAL DEVICE.  
APPLICATION FILED JUNE 4, 1908.

912,702.

Patented Feb. 16, 1909.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

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## PYROGRAPHICAL DEVICE.

No. 912,702.

Specification of Letters Patent.

Patented Feb. 16, 1908.

Application filed June 4, 1908. Serial No. 436,598.

*To all whom it may concern:*

Be it known that I, ERNEST H. E. MALMQUIST, a citizen of the United States, residing at New York city, borough of Bronx, county and State of New York, have invented certain new and useful Improvements in Pyrographical Devices, of which the following is a clear, full, and exact description.

This invention relates to pyrographic needles, but more particularly to a means which adapts the needle for the use of a hydrocarbon or other volatile liquids, to produce heat for the purpose of rendering the burning point hot enough for burning purposes.

To obviate the necessity of using a spraying, or pumping device, to vaporize the liquid to prepare it for use at the burning point, I insert within the tubular burning needle, which I preferably use, an absorbent substance which will collect and feed the liquid to a point a little removed from the point of ignition. The space between the point of ignition and the ending of the absorbent material constitutes a vaporizing chamber or reservoir in which the vapor from the liquid will collect. If I so desire, I can extend the absorbent material, or conductor, to the point of ignition without producing any undesirable results. The liquid is conveyed to the conductor, within the needle, preferably by gravity, from any desirable source.

The novel features of my improved device will be pointed out in the following description and appended claims.

I will now proceed to describe my invention with the aid of the accompanying drawing, wherein;

Figure 1 illustrates a longitudinal sectional view of a pyrographic needle embodying my improvement; Fig. 2 is an enlarged sectional view thereof, taken on a line *a-a* in Fig. 1; Fig. 3 is an enlarged end view of another form of conductor; and Fig. 4 is a side elevation thereof, on a reduced scale, a portion only of the conducting material being shown.

In the drawing, 1 indicates a handle or stock having a bore 2 which communicates with a counter-bore 3 in the front end of the handle 1. Within the bore 2, I fit a bushing 4 of asbestos, the said bushing extending beyond the front end 5 of the handle 1, as shown. In the bushing 4, I fit a tubular

needle 6, the said needle terminating in a burning point 7. Adjacent the point 7 the needle 6 is perforated, as at 6<sup>a</sup> for the escape and ignition of the vaporized liquid. A tube 8 connects the needle 6 with a reservoir 9, same containing any volatile combustible liquid such as alcohol, gasoline, etc. The reservoir 9 is preferably suspended at a point higher than the object upon which the needle is used, in order that the liquid can reach the needle by gravity.

In order to control the flow of and gradually conduct the liquid from the tube 8 to the point 7, I place within the needle 6 a plug consisting of an absorbent conductor 10, the said conductor being made out of mineral wool, asbestos or cotton as may be desired. In order to allow the vapor from the liquid to collect, I preferably stop the conductor at about the point shown in order to form a reservoir, or vaporizing chamber 11.

To adapt the conductor 10 for ready insertion and removal, I wind around a wire core 12 the absorbent material or conductor proper 13, being preferably wound around it spirally, the grain of the material being preferably longitudinally disposed in order to insure a rapid capillary attraction. The conductor 10 will fit the bore of the needle sufficiently snug to prevent any liquid from reaching the chamber or reservoir 11; that is to say, the liquid as a body, but not snug enough to bind the fiber of the material and prevent a free absorbent action.

The function of the conductor 10 is quite obvious, as the liquid in the tube 8 will be absorbed by the material 13 of the conductor, and conveyed to the chamber 11, in which the gases will collect and flow through the perforations 6<sup>a</sup> and ignited, whereby the point 7 is heated. The gases will continue to burn as long as the liquid is fed to the conductor 10. If desirable, the conductor 10 may extend up to the perforations 6<sup>a</sup>.

In the form of conductor shown in Figs. 3 and 4, the conducting material 14, which comprises strands of conducting material, is held between the entwined core wires 15 and 16, the strands of the conducting material 14 being bent to form a substantially cylindrical mass.

Having now described my invention, what I claim and desire to secure by Letters Patent is:

1. A pyrographical device comprising a

stock, a tubular burning-needle carried by  
said stock, said needle being adapted, at one  
end thereof, to receive a volatile combustible  
fluid, the other end of the said needle being  
5 provided with openings, a conductor of ab-  
sorbent material within said needle adapted  
to extend from the receiving end of said  
needle to a point adjacent to the openings of  
the opposite end of said needle, and a tube  
10 adapted to convey a constant supply of com-  
bustible fluid to the receiving end of said  
needle.

2. A pyrographical device comprising a  
stock, a tubular burning-needle carried by  
15 said stock, said needle being adapted, at one

end thereof, to receive a volatile combustible  
fluid, the other end of the said needle being  
provided with openings, a core within said  
needle comprising a plurality of entwined  
wires, and a conductor comprising a plurality 20  
of strands of absorbent material carried by  
said core, said strands being held between  
the entwined wires of the core and bent to  
form a cylindrical mass.

Signed at New York city, N. Y., this 1st 25  
day of June, 1908.

ERNEST H. E. MALMQUIST.

Witnesses:

EDWARD A. JARVIS,  
ABRAM SHLIVEK.