

No. 754,944.

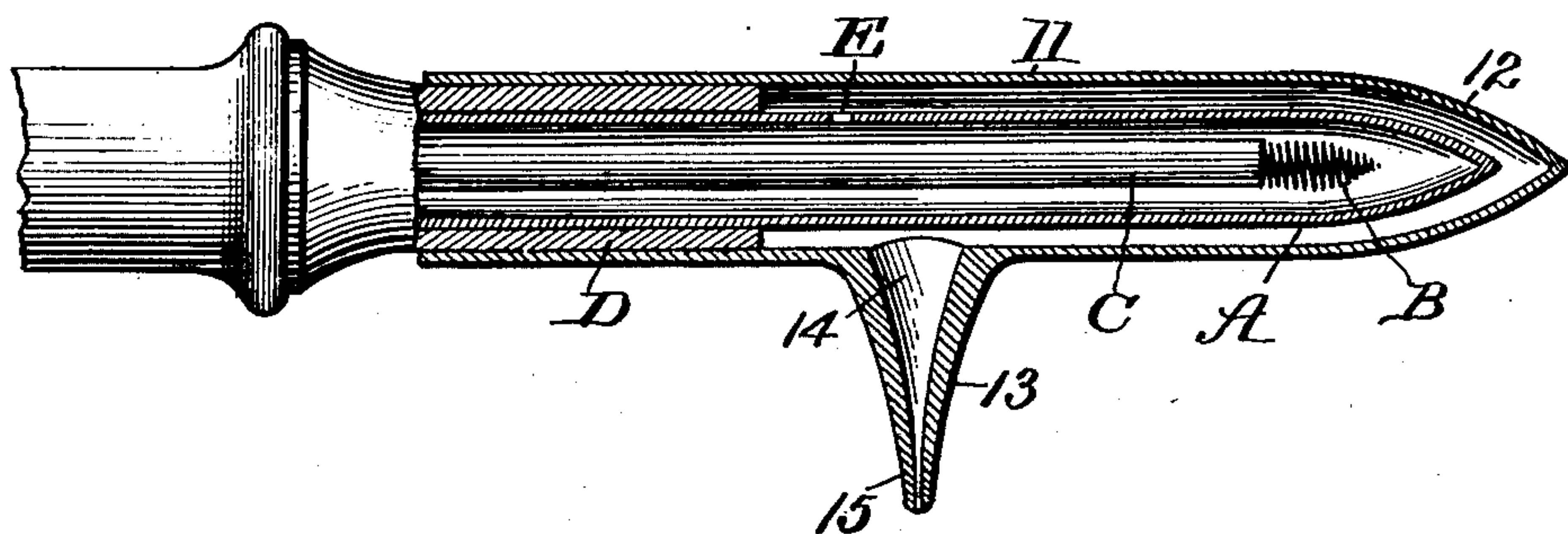
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Z. N. TYSSOWSKA.  
TOOL FOR PYROGRAPHIC WORK.

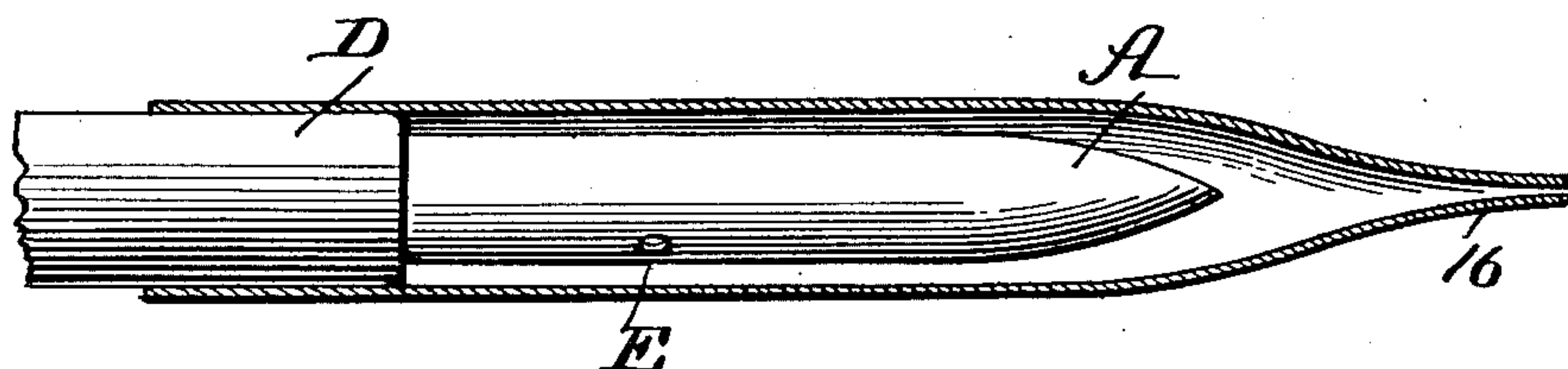
APPLICATION FILED JAN. 29, 1903.

NO MODEL.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## TOOL FOR PYROGRAPHIC WORK.

SPECIFICATION forming part of Letters Patent No. 754,944, dated March 15, 1904.

Application filed January 29, 1903. Serial No. 141,071. (No model.)

*To all whom it may concern:*

Be it known that I, ZELL NIVER TYSSOWSKA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tools for Pyrographic Work, of which the following is a specification.

My invention relates to tools for burning and scorching purposes, particularly as employed for the artistic burning or charring of wood or leather and other articles, which constitutes the art known as "pyrography." The tools ordinarily used in this art consist of a hollow platinum member or "point," which is maintained at a temperature of incandescence by the combustion of a current of carbureted air which is made to pass through the instrument. The gases then pass away through a small hole in the side of the body of the tool. The incandescent point is employed to burn a design upon any material over which it is traced by actual contact therewith. In addition to this tool there is sometimes employed another tool known as a "scorcher," in which a blast of burned gases is made to issue through a small hole in a platinum point.

In my previous patent, No. 727,034, dated May 5, 1903, I have described a combination-tool which is adapted to be used as a burner and a scorcher at the same time, the scorcher portion serving, in addition to its own function, as a convenient chimney or flue for the burner portion, and the burner portion, in addition to its own function, serving as a convenient heater for the jet of gases which is delivered by the scorcher portion.

In the present application I show a nozzle device as a separate article of manufacture designed to be applied to any ordinary pyrographic point or tool and by which the objects and advantages of my above-named invention and other objects may be attained in a simple and easy manner.

Another object of my invention is to provide an improved form of scorcher.

Every scorcher in use before my invention was merely an ordinary platinum point with a hole in the end thereof. The hot gases coming from this hole in the hot end of the point came directly from the fire, and there-

fore when the point was well heated the heat of the escaping gases was very intense and it was almost impossible to cool the point enough to make a light shade without the point going out. Moreover, the heat of the escaping gases varied very radically with the lesser or greater pumping of the blowing-bulb. This was due to the fact that the hot gases escaped from the point directly on leaving the fire, in addition to the fact that the thin walls of platinum heat and cool very quickly. This uncertain and changeable temperature of the escaping gases renders them practically useless for fine pyrographic work. Furthermore, in the scorcher hitherto employed, consisting of a mere hole in the end of an ordinary platinum point, the hot gases were forced out through this hole in an uneven ragged blast, altogether unsuitable for fine pyrographic work, instead of the hot smooth fine straight stream projected with precision by my device.

The objects of my invention are therefore to overcome the above-named disadvantages and attain the above-named features of improvement. With these objects in view my invention consists of the mechanism included within the scope of the appended claims, a particular embodiment of which is illustrated in the accompanying drawings, in which—

Figure 1 illustrates by a longitudinal section one form of my device applied to an ordinary pyrographic tool or point. Fig. 2 illustrates in similar view another form of my device applied to a pyrographic tool or point.

Referring to Fig. 1, A denotes the usual platinum point made hollow to form a combustion-chamber. C is a concentric tube through which the fuel-gases are supplied, and B is the usual platinum coil at the end of the supply-tube, which coil is not essential and may be dispensed with. D indicates the heavier metal sleeve to which the thin-walled platinum point is joined, and E the escape-orifice for the burned gases from the combustion-chamber. All this is the usual and ordinary form of tool, and no claim is made to this construction. My invention comprises a tubular sheath or casing 11, which slips onto and fits the sleeve portion D and is suitably secured thereon and embraces or incloses the whole of



the combustion-chamber. The end 12 of the casing is made of any desired shape, but may be pointed, if desired, in the manner of an ordinary pyrographic tool. On the side of the casing there is a nozzle 13. The casing 11 and the nozzle may be made of any material desired. The nozzle, however, is preferably made of aluminium, brass, or copper and of such solidity and substantial construction as to maintain its temperature for a certain period and not cool off suddenly. By this means the gases are less subject to sudden variations of temperature and issue at a proper working temperature.

In Fig. 2 is shown another form of scorcher device or nozzle which may be slipped over an ordinary tool or point A, the tube fitting snugly over the portion D, as in the construction shown in Fig. 1. The gases escaping from the escape-hole E pass forward over the hot point along the outer surface of the combustion-chamber and into the longitudinally-arranged nozzle 16, which projects the gases in a fine smooth straight jet or stream. In this form the combustion-chamber is between the nozzle and the issue-orifice E from the combustion-chamber. The gases are thus reheated as they pass along and around the sides of the combustion-chamber and over the incandescent point, which they must do before they issue from the discharge-nozzle. This same result is also in a limited degree secured in Fig. 1.

While I have described preferred forms of my invention, I wish it to be understood that I do not limit myself thereby in any way, but consider within my invention any structure which may be included within the scope of the appended claims. Thus, for instance, I do not confine myself to a nozzle having a tapering channel-way, as shown, nor to the location of the nozzle in relation to the combustion-chamber nor to the angle of the nozzle nor to the shape of the inclosing sheath.

Among the important and distinctive features of a sheath which embraces the entire combustion-chamber may be mentioned the fact that the gases being confined within the sheath are reheated by the external radiation from the combustion-chamber, thus economizing the fuel-gases and requiring a smaller consumption of the hydrocarbon. It also maintains a more constant temperature by a larger body of hot gases being held in reserve within the sheath and promotes a more uniform flow from the nozzle, which flow is less affected by the pulsations of the pumping-bulb, since the sheath forms a reservoir-chamber for the hot gases. Furthermore, the sheath insulates and protects the more or less delicate platinum point against accidental mechanical abrasion and damage and also avoids the accidental burning contact of the incandescent point when using the scorcher.

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

1. The combination with a pyrographic tool having a walled combustion-chamber; of a scorcher attachment comprising an external sheath adapted to completely inclose the walls of the combustion-chamber, said sheath being provided with a discharge-nozzle for directing the issuing gases in a fine hot stream, substantially as described.

2. A scorcher attachment for a pyrographic tool comprising an external sheath adapted to completely inclose the combustion-chamber, said sheath being extended at its end in the form of a nozzle having a fine issue-orifice substantially as and for the purpose described.

3. A pyrographic tool comprising a gas-supply tube, a combustion-chamber inclosing the supply-tube and having an escape-orifice for the burned gases, and an external sheath having a scorcher-nozzle, the combustion-chamber of the pyrographic point being located between the escape-orifice from the combustion-chamber and the scorcher-nozzle of the sheath, whereby the escaping burned gases are made to travel exteriorly over the combustion-chamber and be reheated in passing from the escape-orifice of the combustion-chamber to the scorcher-nozzle substantially as described.

4. A pyrographic scorcher comprising a walled combustion-chamber having an escape-orifice for the burned gases, a reservoir-chamber exterior to the combustion-chamber and in open communication with the escape-orifice of said combustion-chamber, and a nozzle communicating with the reservoir-chamber and having a fine issue-orifice whereby the pulsations of the pumping-bulb are received in the reservoir-chamber and a practically continuous and uniform stream of hot gases is made to issue from the nozzle substantially as described.

5. A tool for pyrographic purposes, consisting of the combination with a hollow pyrographic point having an interior combustion-chamber and provided with an escape-orifice for the discharge of the hot gases; of a scorcher consisting of a sheath constructed and arranged to be attached to said pyrographic point to inclose the entire end of the same, and having a nozzle through which the said products of combustion or hot gases from said escape-orifice may be projected with precision against the work to be scorched, substantially as described.

In testimony whereof I have signed my name to this specification in presence of two witnesses.

ZELL NIVER TYSSOWSKA.

Witnesses:

JNO. C. DONNELLY,  
J. GORHAM TYSSOWSKI.