No. 776,482. PATENTED DEC. 6, 1904.

J. ANDERSON.

PYROGRAPHIC PENCIL EXCITER.

APPLICATION FILED OCT. 17, 1903.

NO MODEL.

Fig. 1.

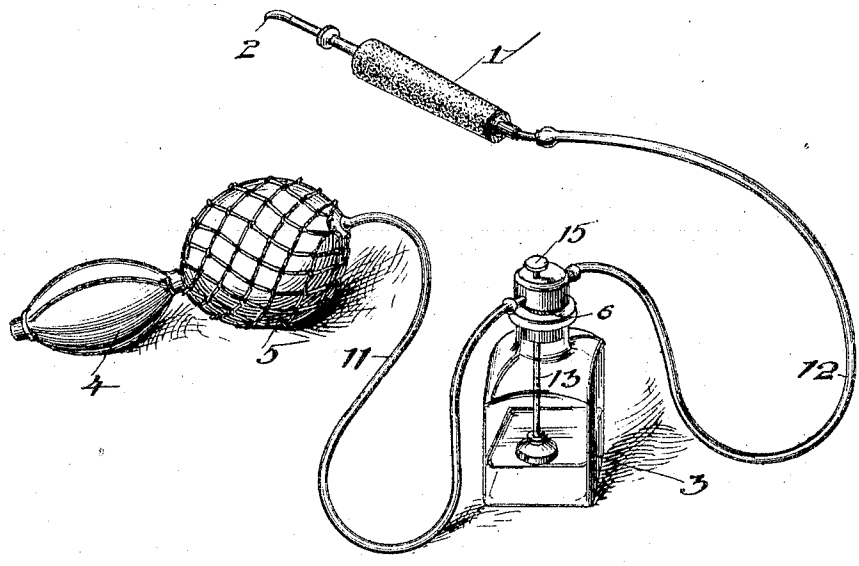


Fig. 2.

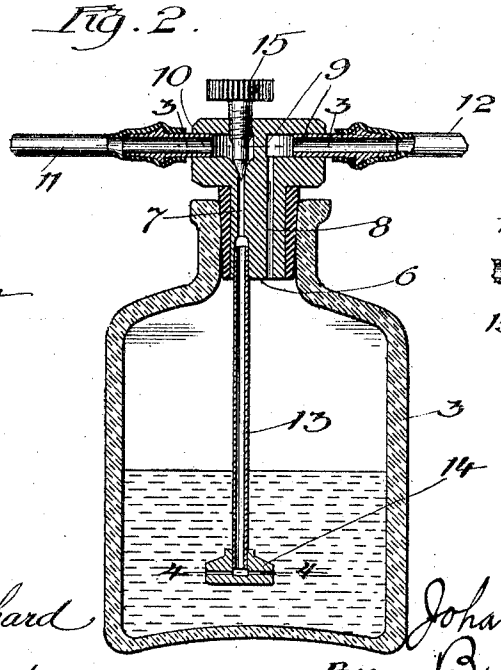


Fig. 3

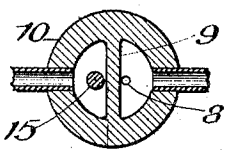
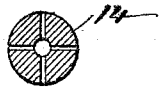


Fig. 4.



Witnesses:
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No. 776,482. Patented December 6, 1904.

UNITED STATES PATENT OFFICE.

JOHANNES ANDERSON, OF CHICAGO, ILLINOIS.

PYROGRAPHIC-PENCIL EXCITER.

SPECIFICATION forming part of Letters Patent No. 776,482, dated December 6, 1904.

Application filed October 17, 1903. Serial No. 177,397. (No model.)

To all whom it may concern:

Be it known that I, JOHANNES ANDERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Pyrographic-Pencil Exciters, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to apparatus for exciting a pyrographic pencil to temperature necessary for its work and controlling the excitation of the same for uniformity or variation of the temperature.

It consists in the features of construction set out in the claims.

In the drawings, Figure 1 is a perspective view of a familiar form of pyrographic pencil with devices in connection for exciting the same embodying my invention. Fig. 2 is a vertical section of the receptacle for the excited fluid and the devices therein containing my invention. Fig. 3 is a section at the line 3 3 on Fig. 2. Fig. 4 is a section at the line 4 4 on Fig. 2.

The pyrographic pencil 1 is of familiar construction, having its platinum terminal 2 excited for maintenance of the temperature by vapor generated from the liquid in the receptacle 3 and forced through the pencil by the pumping apparatus, represented by the elastic bulb 4 and pressure-retaining bulb 5. A defect has been found in the use of similar apparatus heretofore, arising from the fact that the liquid, usually benzin or gasolene, employed for generating the excitant vapor after a short use of the apparatus becomes in the condition technically called "dead"—that is, a condition in which vaporization occurs very slowly, so that it is not furnished to the pencil in sufficient quantity to adequately excite the platinum terminal for maintenance of a working temperature, or if a temperature sufficient for fine lines is produced a temperature adequate for broad and heavy and varied work cannot be maintained.

My improvement consists in the structure of the vaporizer, which comprises the receptacle 3, having a stopper 6, provided with two vertical passages 7 and 8, which at their lower end open in the receptacle and extend upward in the stopper for connection at their upper ends with outleading passages 9 and 10, these latter being connected, respectively, by a duct 11 with the air-pressure bulb 5 and the duct 12 with the pencil 1. My improvement consists in extending from the lower end of the duct 7 a tube 13 down to the bottom of the receptacle 3, where it opens for discharge below the surface of the liquid therein, being preferably provided with a finely-perforated discharge-head 14 for discharge of the air in fine jets in several directions in the liquid. A long tapered or "needle" valve 15 is set through the top of the stopper to control the inlet for air into the passage 7, and thereby control the discharge of air through the head 14. With this construction the air instead of being compressed upon the top of the liquid with a tendency to "deaden" the same, restraining and diminishing its tendency to vaporize, is discharged in the liquid and passing up through it for emergence above the liquid keeps the liquid in effervescence, and the air is itself thoroughly charged with the vapor as it breaks from the surface of the liquid, and the liquid itself is more or less sprayed into the air above the surface of the receptacle, so that vaporization is promoted instead of being restrained by continued use, and the longer it is used the more rapidly is the vapor formed up to a certain limit. The result of the change of the structure is that the pencil-point 2, having once been heated to proper point for further excitation by the catalytic action of the vapor upon the platinum, according to a well-known principle, is easily maintained at any temperature, even to whiteness, if desired, and even when it has been allowed to cool to a point even below redness it can be reëxcited to redness and incandescence by the exciter having my improvements described.

The tendency to increase the rate of vaporization by continued use by this device on account of the increased aeration of the liquid makes it necessary to regulate the discharge of air to prevent the excitation of the pencil from becoming excessive, and for this purpose

the valve 15 is an important and practically a necessary addition to accompany the addition of the duct 13 for discharging the air within instead of upon the liquid. If the artist is executing work which requires intense pyrographic effect, so that he desires to use the pencil broadside for heavy shadings or edgewise with pressure for indentations or carving effects and for such purposes needs to keep the working point 2 at high temperature, the valve may be set so as to permit this result; but when working for light effects the valve may be adjusted so as to restrict the discharge of air to the quantity which according to the condition of the liquid will yield the right temperature. The different degrees of volatility of different lots or quantities of the liquid, whether it be benzin, gasolene, or other volatile hydrocarbon, will necessitate different adjustment of the valve to yield the same excitant effect.

I claim—

1. A pyrographic-pencil exciter comprising a receptacle for the liquid to afford the excitant vapor; a removable stopper for such receptacle having two non-communicating passages from the inner to the outer end thereof; a tube connected to one of said passages and extending down toward the bottom of the receptacle and provided at the lower end with a finely-perforated distributing-head; a valve in the stopper controlling said duct, the other duct having its opening at the inner end of the stopper for receiving vapor from the upper part of the receptacle, and having its exterior end provided with connections for the pencil.

2. A pyrographic-pencil exciter comprising a receptacle for the liquid to afford the excitant vapor; a removable stopper having an air-inlet passage and a gas-outlet passage, both extending from the lower end of the stopper upward therein to a point above the top of the receptacle, said stopper having outwardly-extending passages connecting with the upper ends of said inlet and outlet passages respectively, and inlet and outlet pipes connected to said outwardly-extending passages respectively, the air-inlet passage having at its lower end a duct extending downward within the receptacle and terminating for discharge near the bottom thereof; a taper-pointed valve set through the top of the stopper and entering endwise the upper end of one of said upwardly-extending passages and adapted to be screwed up and down in the stopper to regulate the flow of fluid through said passage.

3. A pyrographic-pencil exciter comprising a receptacle for the liquid to afford the excitant vapor; a removable stopper having an air-inlet and a gas-outlet passage, both extending from the lower end of the stopper upward therein to a point above the top of the receptacle, said stopper having outwardly-extending passages connecting with the upper ends of said inlet and outlet passages respectively, and inlet and outlet pipes connected to said outwardly-extending passages respectively, the air-inlet passage having at its lower end a duct extending downward within the receptacle and terminating for discharge near the bottom thereof; a taper-pointed valve set through the top of said stopper across the outwardly-extending passage which connects with the air-inlet passage and into the upper end of said air-inlet passage for regulating the inflow of air for discharge into the liquid in the receptacle.

4. A pyrographic-pencil exciter comprising a receptacle for the liquid to afford the excitant vapor; a removable stopper for such receptacle having two non-communicating passages extending from the inner end thereof upward to a point above the top of the receptacle; non-communicating chambers in the stopper into which said passages respectively lead; inlet and outlet pipes connected to said chambers respectively, and a taper-pointed valve set into the stopper across one of said chambers and taking into the end of the passage leading thereinto for regulating the flow of fluid.

5. A pyrographic-pencil exciter comprising a receptacle for the liquid to afford the excitant vapor; a removable stopper having an inlet and a discharge passage, both extending from the lower end of the stopper upward therein to a point above the top of the receptacle; one of said passages extending thence at an angle to the upwardly-extending part; a taper-pointed valve set into the stopper across one part of said last-mentioned passage and entering endwise into the other part and adapted to be screwed in and out to regulate the flow of fluid through said passage; the inlet-passage having at its lower end a duct extending downward within the receptacle and terminating for discharge near the bottom thereof, both said passages being extended to the outer exposed surface of the stopper and being provided with inlet and outlet pipes connected to them respectively at their outer ends.

6. A pyrographic-pencil exciter comprising a chamber for containing liquid, said chamber having an air-inlet and a gas-outlet passage, the latter terminating near the upper part for intake, and the former terminating near the lower part for discharge, one of said passages being turned at an angle, and a taper-pointed valve which crosses one of the parts at such angle and enters endwise into the other part, adapted to be screwed in and out to regulate the flow of fluid.

7. A pyrographic-pencil exciter comprising a chamber for containing liquid, said chamber having an air-inlet passage and a gas-discharge passage, the latter opening for intake at the upper part, and the former opening for discharge at the lower part, the inlet-passage be-

ing turned at an angle; a taper-pointed valve extending across one part of the passage at the angle and entering endwise into the other part, and adapted to be screwed in and out to regulate the flow of fluid through such angular passage.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Chicago, Illinois, this 9th day of October, 1903.

JOHANNES ANDERSON.

In presence of—
CHAS. S. BURTON,
FREDK. G. FISCHER.