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E. L. MEYER
PYROGRAPHIC PENCIL
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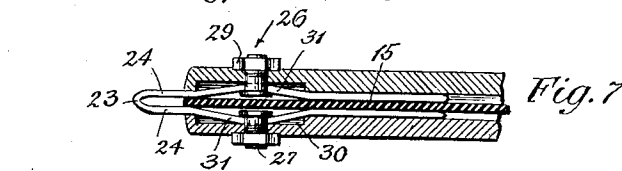
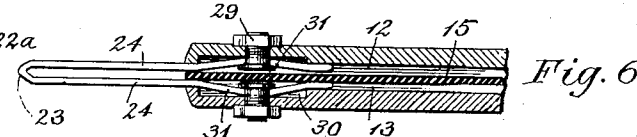
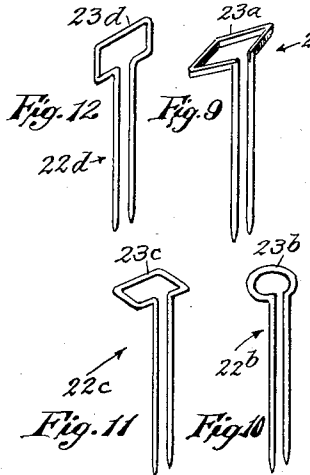
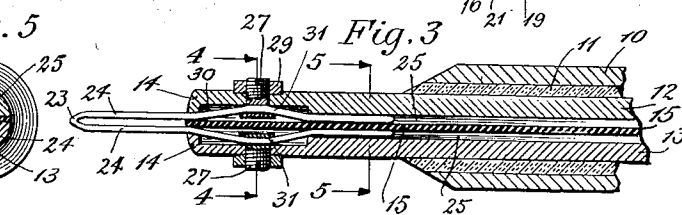
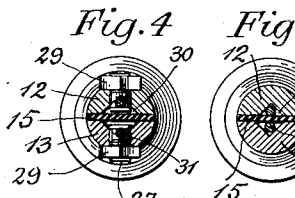
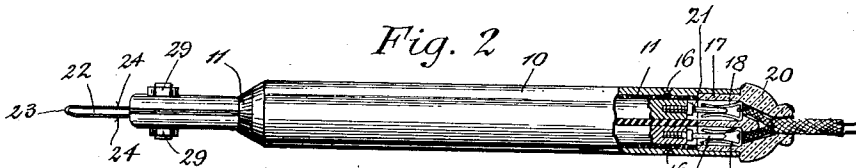
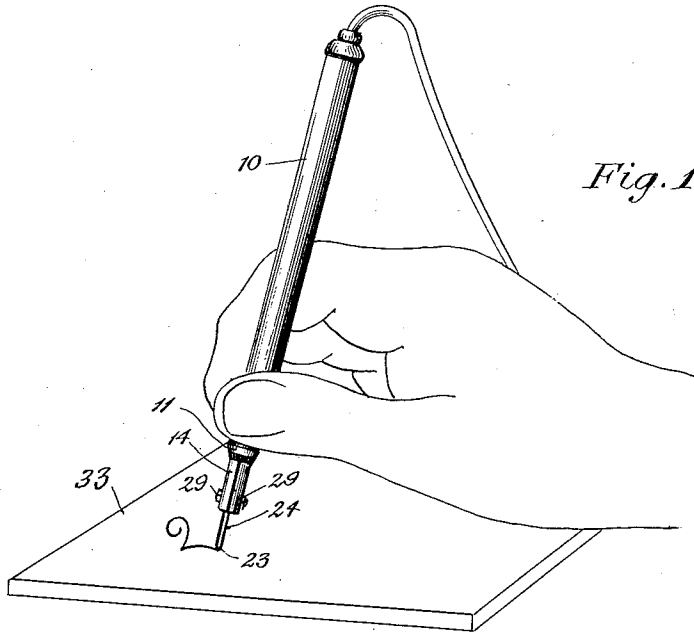


Fig. 8
28 26 27 32
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PYROGRAPHIC PENCIL

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6 Claims. (Cl. 219—29)

This invention relates to electric pyrographic pencils.

An object of this invention is to provide a pencil of this kind in which the temperature of the part applied to the work may be varied at the will of the user.

Another object is to provide a pencil in which the part applied to the work may be varied in shape to suit the user's needs, and, preferably, may be formed into designs which are repeatedly used in the work being executed.

A still further object is to provide an electric pyrographic pencil which may be used with currents of very low voltage so that danger of the user being shocked upon inadvertently touching the terminals is eliminated. This is accomplished by utilizing a heating resistance which is brought directly in contact with the work, and, therefore, may be very short so that it may be brought to desired temperature by currents of extremely low potentials—1 volt or less if desired.

Other features and advantages will hereinafter appear.

In the accompanying drawing which shows the present invention in its preferred form—

Figure 1 is a perspective view of the device of the present invention, showing the manner in which the pencil may be used.

Fig. 2 is an elevation showing the rear end of the holder broken away to show the manner in which the current-conducting wires are connected to the conducting members.

Fig. 3 is a longitudinal sectional view of the working end of the pencil.

Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 3.

Fig. 6 is a longitudinal section of the operating end of the current-conducting bars showing the loop of the resistance wire as extended far beyond the ends of the conducting members.

Fig. 7 is a similar view, showing the loop of the resistance wire located closely adjacent to the ends of the conducting members.

Fig. 8 is a perspective view of one of the clamping screws by means of which the ends of the resistance wire are secured to the conducting members.

Figs. 9, 10, 11 and 12 are views in perspective showing, respectively, various forms in which the resistance wire may be bent—the wires shown constituting burning elements which may be interchangeably secured in the holding device shown in Figs. 1 and 2.

As shown in the accompanying drawing, the device of the present invention comprises a handle portion 10 which may be made of wood, cork, or the like. The handle portion 10 is tubular and its longitudinally extending hole is preferably lined with heat-resisting material 11.

Within the lined handle portion 10 there is provided a pair of conducting members 12 and 13. These preferably have end portions 14 projecting beyond the handle portion 10 and the heat-insulating material 11.

In the form of the invention at present preferred, the current-conducting members 12 and 13 preferably snugly fit within the lining 11 in the handle portion 10, and, since the passage through the handle portion is cylindrical, the conducting bars are preferably made semicylindrical, i. e. half round, or substantially so. They are separated electrically by a strip of insulating material 15 extending longitudinally between the half-round conducting bars 12 and 13, and the latter with the insulating strip 15, preferably completely fills the longitudinal passage in the handle portion 10.

If desired, the conducting bars 12 and 13 may be held in the handle portion positively against relative movement by screws 16. The conducting members 12 and 13 extend for practically the entire length of the handle, but, at the end thereof, which is opposite the projecting ends 14, the handle portion 10 extends beyond the conducting members 12 and 13 and forms a socket for the reception of a plug 17 of insulating material having within it contact members 18 connected to wires 19 by means of which current is supplied to the device, the plug having a cap 20 which limits the movement of the plug into the top end of the handle.

The conducting members 12 and 13 are provided with blades 21 engaging the contacts 18, 19 of the plug. Thus, when the plug is connected to the handle, the current is conducted through the conducting bars 12 and 13.

Instead of employing, as was heretofore customary, an electrical resistance to heat a burning point on the pencil, the present invention makes provision for bringing an incandescent resistance wire directly in contact with the work. By so doing, the heat generated by the heating element, being exterior of the handle, does not excessively heat the handle portion and less heat need be developed since it is applied directly, and currents of such low potential as to be harmless to the operator may be employed.

According to the present invention, the heat-

ing element comprises a strand of resistance wire 22 which may, as shown in Figs. 1 and 2, have a loop portion 23 and tine-like end portions 24 adapted to be inserted in the end of the pencil.

5 In the form shown, the ends 24 of the wire are inserted in sockets provided in the ends 14 of the conducting members 12 and 13, and, to receive the wire, the conducting members 12 and 13 are provided with longitudinally extending grooves 25, preferably V-shape.

The insulating strip 15 being located between the grooved portions of the conducting bars 12 and 13 forms in each of the latter a socket to receive the tines of the resistance wire.

15 In the broader aspects of this invention, the resistance wire may be held in the sockets in any suitable or desirable way. It is preferable, however, that the wire ends be mounted for longitudinal movement within the sockets so that a greater portion of the legs 24 may extend beyond the current-conducting members 12 and 13 as shown in Fig. 6, or a lesser portion as shown in Fig. 7. In this way, the degree of incandescence or the temperature to which the burning wire 25 may be brought when energized may be varied, for, in moving the wire into and out of the sockets, less or more of the wire is made electrically effective, and, therefore, the temperature of the wire is increased or decreased.

30 For securing the burning-wire 22 to the conducting members 12 and 13 and yet permit them to be moved longitudinally when desired, the present invention provides for each wire end and the conducting bar a manually releasable clamp 26. This comprises, as shown in Figs. 3, 6, 7 and 8, a threaded stud or screw 27 having at its lower end a hole 28 adapted to align with the groove 25 in the bar. The screw 27 extends through a hole in the end 14 of the bar to the exterior where it receives a nut 29 which may be knurled for easy operation, and by means of which the same is moved transversely of the bar. When the tines 24 of the burning wire are inserted in the sockets 25, the ends thereof pass through the apertures 28 when the nut 29 is loosened. When, however, the nut is tightened, the naked portion of the wire is drawn outwardly securely clamping it to the end 14 of the conducting bar. To increase the binding action between the clamping stud 27 and the wire, a deeper groove 30 is provided in the end 14 of the conducting member so that when the screw is drawn outwardly, a bend 31 will be formed in the wire end, and this bend will resist longitudinal movement of the tines 24 until the screw is again released.

45 The enlarged groove 30 is preferably also V-shape, and the inner end of the screw 27 is provided with a head 32 lying in this V-shaped groove. The head 32 has flat sides which, engaging the walls of the V-shaped groove 30, causes the stud 27 to be so positioned that the aperture 28 will be in alignment with the V-shaped grooves 25 receiving the wire ends, so that the tines 24 may easily and conveniently pass through the holes 28 in the clamping screws.

50 The grooves 25 in the members 12 and 13 may extend for substantially the entire length of the bars 12 and 13, so that great excess of wire may be stored in the handle portion out of the way and to be used more or less depending upon the will of the operator.

The resistance wire of which the burning element 22 is formed is preferably sufficiently ductile to permit the user to shape the loop portion 75 into various designs so that these designs may be,

as in branding, reproduced at various places on the work. For instance, as shown in Fig. 9, the burning element 22a has a diamond-shape loop portion 23a, while the burning element 22b of Fig. 10 has a circular loop portion 23b, and the burning element 22c of Fig. 11 has a square loop portion 23c. In each of these instances referred to, the tines 24 are bent at right angles to the loop portions so that by holding the handle substantially perpendicular to the work, the design outlined by the loop portion will be produced on the work as by branding. The burning element 22d shown in Fig. 12 is also provided with a rectangular loop portion 23d, but this lies in the same plane as the tines and may be used to provide a wide burning surface, such as when making borders or wide lines. Of course, the angle between the loop portions 23a, 23b and 23d and their tines need not be a right-angle for a lesser angle will suffice, so long as the entire loop may be placed at once on the working surface.

15 It should be noted that, according to the present invention, the loop of the burning wire 22 is spaced substantially from the handle and conducting members 12 and 13, and that it is free and is unsupported except by the ends of the wires in which the loop forms a part. Being free and unsupported, heat developed by the wire is not readily conducted to the handle, and the wire, although stiff enough to sustain the shape given it by the user, may be formed into desired shapes or forms.

As shown in Fig. 1, the handle portion 10 is gripped by the fingers of the operator's hand and employed like a pencil, causing the loop portion 23 to travel over the work 33 which may be of wood, leather, or other burnable material.

By employing a resistance wire as the means to be directly applied to the work, it is practical to energize the device with low potential currents of one volt for instance, or even less. This potential is sufficient to raise the wire which will maintain its given shape when brought to incandescence, and to maintain it so as it continues to be applied to the work. These currents may be supplied from a suitable transformer connected to house current, if desired. While one of the main reasons for providing low voltage is: to avoid the dangers of the user being shocked, yet, by employing the low voltage, a burning wire of satisfactory length, diameter and material may be used.

Variations and modifications may be made within the scope of this invention and portions of the improvements may be used without others.

I claim:

1. In an electric pyrographic pencil, a handle having a longitudinally extending hole therein; a heat-resisting member lining the hole in said member; a pair of low resistance conductors 60 lying in parallel relation and together substantially fitting the hole within the heat-resisting member; current-insulating means interposed between said conductors and with the latter substantially filling said hole in the handle portion; and sockets in the ends of said conducting members at one end of the handle to receive and hold a wire so as to pass current therethrough, the conducting members being in the form of substantially half-round bars fitting a substantially cylindrical hole in the handle portion, and each of the flat sides of said metal bars being provided with a groove forming a channel for receiving one end of the resistance wire.

2. In an electric pyrographic pencil, a handle 75

having a longitudinally extending hole therein; a heat-resisting member lining the hole in said member; a pair of low resistance conductors lying in parallel relation and together substantially fitting the hole within the heat-resisting member; current-insulating means interposed between said conductors and with the latter substantially filling said hole in the handle portion; and sockets in the ends of said conducting members at one end of the handle to receive and hold a wire so as to pass current therethrough, the conducting members being in the form of substantially half-round bars fitting a substantially cylindrical hole in the handle portion, and each of the flat sides of said metal bar being provided with a groove forming a channel for receiving one end of the resistance wire, said metal bars having clamps for securing the ends of the resistance wire in said grooves and said clamps being located adjacent the ends of the metal bars carrying the resistance wire.

3. In an electric pyrographic pencil, a handle portion having a longitudinally extending hole therein; a pair of low resistance conductors arranged in said hole in side by side relation, each of said conductors having a substantially plane portion, said portions being substantially parallel and facing each other near the working end of the pencil; current-insulating means interposed between said conductors and engaging the substantially plane portions thereof, said portions being grooved along the length of the pencil to form channels for receiving the end lengths of a resistance wire; and a draft means passing through one of said plane portions and operable from the exterior of the pencil to draw the associated end length of resistance wire outward from the center line of the pencil to clamp said end length in said channel.

4. In an electric pyrographic pencil, a handle portion having a longitudinally extending hole therein; a pair of low resistance conductors arranged in said hole in side by side relation, each of said conductors having a substantially plane portion, said portions being substantially parallel and facing each other near the working end of the pencil; current-insulating means interposed between said conductors and engaging the substantially plane portions thereof, said portions being grooved along the length of the pen-

cil to form channels for receiving the end lengths of a resistance wire; and a draft means passing through one of said plane portions and operable from the exterior of the pencil to force the associated end length of the resistance wire into said channel, said channel being locally deepened to cause said end length to be warped where engaged by the draft means.

5. In an electric pyrographic pencil, a handle portion having a longitudinally extending hole therein; a pair of low resistance conductors arranged in said hole in side by side relation, each of said conductors having a substantially plane portion, said portions being substantially parallel and facing each other near the working end of the pencil; current-insulating means interposed between said conductors and engaging the substantially plane portions thereof, said portions being grooved along the length of the pencil to form channels for receiving the end lengths of a resistance wire; and a draft means passing through one of said plane portions and operable from the exterior of the pencil to force the associated end length of the resistance wire into said channel, said draft means including a threaded member crossing said channel and having an aperture for taking said end length.

6. In an electric pyrographic pencil, a handle portion having a longitudinally extending hole therein; a pair of low resistance conductors arranged in said hole in side by side relation, each of said conductors having a substantially plane portion, said portions being substantially parallel and facing each other near the working end of the pencil; current-insulating means interposed between said conductors and engaging the substantially plane portions thereof, said portions being grooved along the length of the pencil to form channels for receiving the end lengths of a resistance wire; and a draft means passing through one of said plane portions and operable from the exterior of the pencil to force the associated end length of the resistance wire into said channel, said draft means including a threaded member crossing said channel and having an aperture for taking said end length, means being provided for holding said aperture aligned with the channel.

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