(No Model.) 2 Sheets—Sheet 1.

J. F. KRUEGER.

CHARRING TOOL FOR ORNAMENTING WOOD, &c.

No. 522,328. Patented July 3, 1894.

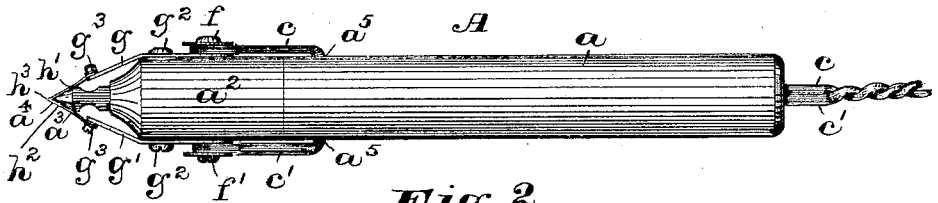

Fig. 2

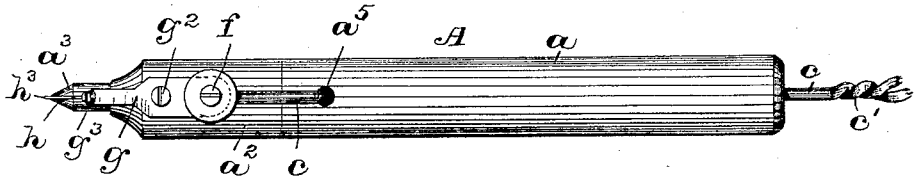

Fig. 3

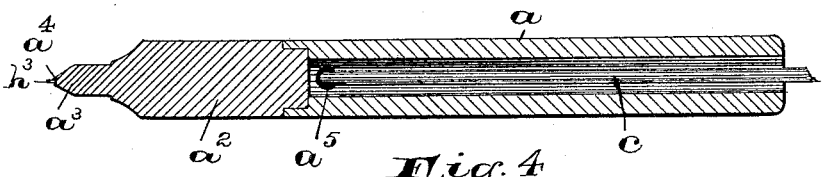

Fig. 4

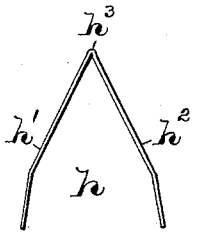

Fig. 5

WITNESSES:

A. W. Marsh.

Wm. H. Canfield, Jr.

INVENTOR:

John F. Krueger,

BY Fred C. Graentzel, ATT'Y.

(No Model.) 2 Sheets—Sheet 2.

J. F. KRUEGER.

CHARRING TOOL FOR ORNAMENTING WOOD, &c.

No. 522,328. Patented July 3, 1894.

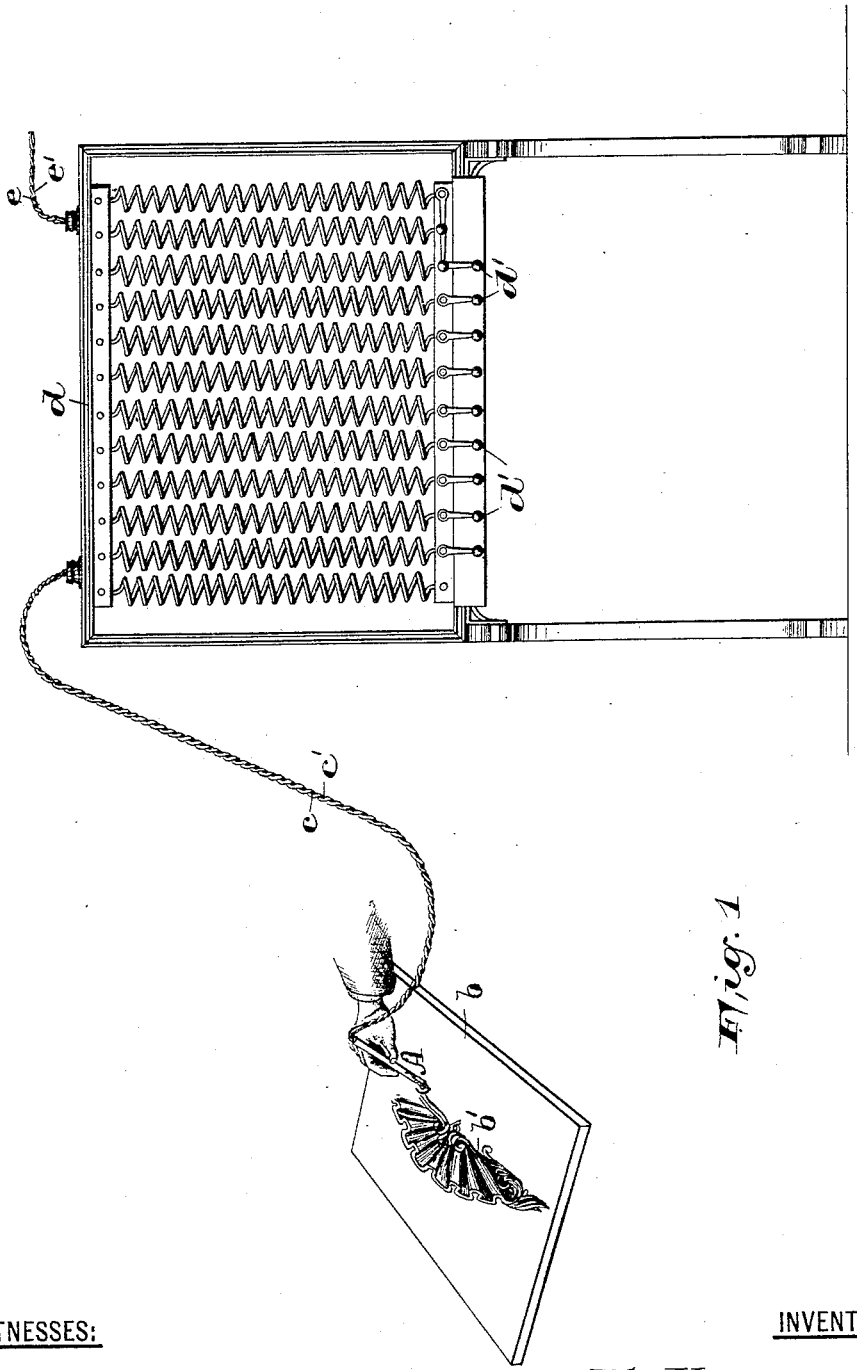

Fig. 1.

WITNESSES:

A. W. Marsh.

Wm. H. Canfield, Jr.

INVENTOR:

John F. Krueger,

BY Fred C. Fraentzel, ATT'Y.

UNITED STATES PATENT OFFICE.

JOHN F. KRUEGER, OF NEWARK, NEW JERSEY.

CHARRING-TOOL FOR ORNAMENTING WOOD, &c.

SPECIFICATION forming part of Letters Patent No. 522,328, dated July 3, 1894.

Application filed February 1, 1894. Serial No. 498,692. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. KRUEGER, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in the Art of Producing Designs, Drawings, &c., on Wood, Leather, &c., by Means of Electricity and Apparatus Therefor; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to a novel method of producing designs upon wood, leather, or other suitable material, by the direct application to the surface of the material, of a charring tool heated by means of an electric current of varying intensity, whereby said surface is sufficiently charred or burned to produce a beautiful effect upon wood or leather, or the like, and designs or drawings can thus be produced upon the surface of the material.

The invention also relates to an instrument into which the current is fed by means of suitable wires and caused to be transmitted through a thin platinum wire in the end of the instrument, which wire becomes heated and the instrument is applied to the surface, upon which the design or drawing is to be made, in the manner of an ordinary drawing pencil or pen.

The invention is illustrated in the accompanying sheets of drawings, in which—

Figure 1 is a view of the instrument and the wires extending therefrom connected with a rheostat, said view clearly illustrating the principles of my invention. Figs. 2 and 3 are a top and side view respectively, of the instrument, and Fig. 4 is a vertical section, taken through the central longitudinal axis in Fig. 3. Fig. 5 is a detail view of the platinum wire employed in the tip or drawing end of the instrument.

Similar letters of reference are employed in each of the above-described views to indicate like parts.

Heretofore, designs, figures, &c., were produced in the surface of wood by applying the heated ends of iron rods to the surface. The method of heating the irons and applying them to the surface is tedious and has many disadvantages, in that the iron cools very quickly, and the heat in the end of iron can not be varied from a weak to a strong heat and vice versa, from a strong heat to a weak heat, unless the iron is reheated and applied many times to the surface upon which the design is to be produced.

By the application of my novel form of instrument, the wires connected with the platinum wire in the end of the instrument can be connected with a suitable rheostat, whereby the current can be rendered strong or weak, and the heat in the charring end of the tool can be instantly regulated, as may be desired, and thus very beautiful effects can be made upon the surface of the wood or leather.

The principle of my invention is clearly illustrated in Fig. 1, in which b represents a block of wood, upon the surface of which a suitable design or picture b' is to be produced.

A is the drawing instrument, connected by means of insulated wires c and c' with a rheostat d, of any suitable construction, into which the electric current is fed by the wires e and e'.

The construction and arrangement of the several parts of the drawing instrument or pen, are illustrated in Figs. 2 and 3, and consist essentially of a suitable holder a, of gutta-percha or other like non-conducting material. Said holder is preferably made in the form of a tube, and is connected at one end with a nose-piece a^2 made of slate, or other like material, being provided with a pointed end a^3 in which is a slot or groove a^4, as will be seen more especially from Fig. 4. The wires c and c' from the rheostat pass through a hole a^5 in the opposite sides of the holder and are connected by means of binding screws f and f', with the connecting plates or conductors g and g', secured by means of screws or pins g^2 on opposite sides of said nose-piece a^2. The free ends of said plates g and g' are provided with small binding screws g^3 to which are connected the ends h' and h^2 of a thin platinum wire h. Said wire, as will be seen from said Figs. 2, 3 and 4, is arranged in said grooves a^4 in the pointed end a^3 of

said nose-piece a^2, and forms the connection for a continuous circuit through the wires c and c', and the parts connected therewith.

The instrument, as will be seen from Fig. 1, is applied in the manner of an ordinary pencil or pen and when the current is turned on, and passes through the wire h, which is made to form a point h^3 on the end, see Fig. 5, said wire h becomes red hot and by being applied to the surface of a piece of wood, leather, or other suitable material, the surface is sufficiently charred or burned to produce the most beautiful designs, figures, &c.

The intensity of the current can be varied by the use of the switches d' connected with the rheostat, and an intense or mild heat can be brought to the point h^3, as may be necessary, to produce the desired effect in the picture or design.

Having thus described my invention, what I claim is—

1. The herein described method of producing designs, drawings, or the like, on wood, leather or other material, which consists in the direct application of an electric current into the end of a charring tool, applying said tool to the surface of the material, varying the intensity of the current through the tool, and charring or burning the design or drawing into said surface, substantially as set forth.

2. An electrical instrument for producing designs, drawings or the like on wood, leather or other material, comprising therein, a holder of non-conducting material, a nose-piece a^2 of slate or other like material connected with one end of said holder, conducting wires connected with said holder, and a thin wire connected with the ends of said conducting wires and arranged to pass over the free end of said nose-piece, adapted to be heated by an electric current passing through said wires, substantially as and for the purposes set forth.

3. An electrical instrument for producing designs, drawings or the like on wood, leather or other material, comprising therein, a tubular holder of non-conducting material, having oppositely-arranged holes a^5, a nose-piece a^2 of slate or other like material connected with one end of said holder, conducting wires leading into said tubular holder and said wires passing through said holes a^5, as set forth, and a thin wire connected with the ends of said conducting wires and arranged to pass over the free end of said nose-piece, adapted to be heated by an electric current passing through said wires, substantially as and for the purposes set forth.

4. An electrical instrument for producing designs, drawings or the like on wood, leather or other material, comprising therein, a tubular holder of a non-conducting material, having oppositely arranged holes a^5, a nose-piece a^2 of slate or other like material connected with one end of said holder, conducting wires leading into said tubular holder and said wires passing through said holes a^5, as set forth, connecting plates or conductors g and g' secured on opposite sides of said nose-piece, binding screws f and f' on said plates g and g' to which the ends of said conducting wires are connected, binding screws g^3 on the opposite ends of said plates g and g', and a thin wire connected with said binding screws and arranged to pass over the free end of said nose-piece, adapted to be heated by an electric current from said wires, substantially as and for the purposes set forth.

5. In the art of producing designs, drawings or the like on wood, leather or other materials, an electrical drawing instrument A, provided with conducting wires c and c', in combination with a rheostat and wires leading from the source of electricity, substantially as and for the purposes set forth.

In testimony that I claim the invention set forth above I have hereunto set my hand this 26th day of January, 1894.

JOHN F. KRUEGER.

Witnesses:
FREDK. C. FRAENTZEL,
WM. H. CAMFIELD, Jr.