L. GLASER.

METHOD OF CONNECTING INCANDESCENT LAMP FILAMENTS WITH METALLIC CURRENT SUPPLY WIRES.

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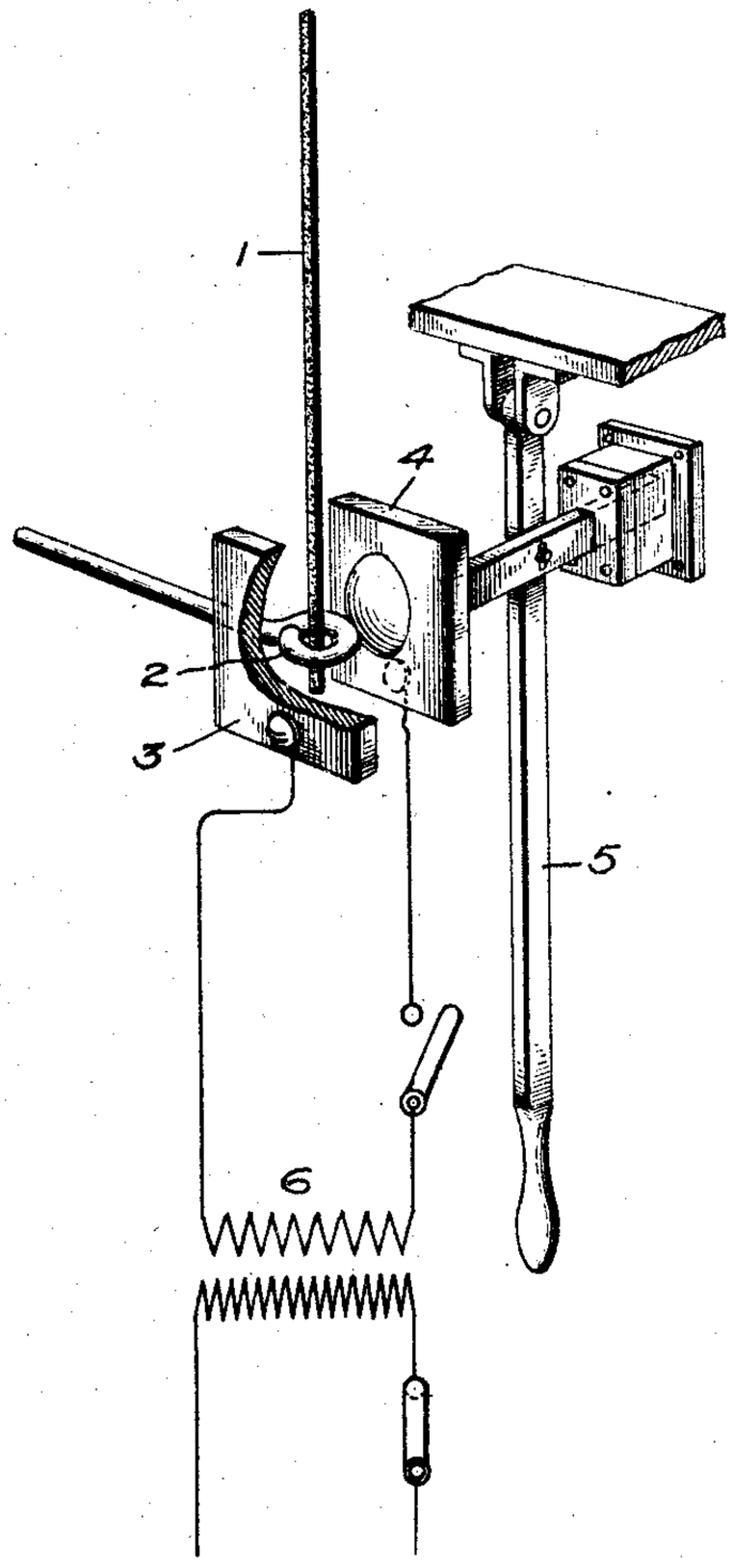
988,329. Patented Apr. 4, 1911.



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UNITED STATES PATENT OFFICE.

LUDWIG GLASER, OF PANKOW, GERMANY, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

METHOD OF CONNECTING INCANDESCENT LAMP-FILAMENTS WITH METALLIC CURRENT-SUPPLY WIRES.

988,329. Specification of Letters Patent. Patented Apr. 4, 1911.

Application filed April 10, 1907. Serial No. 367,393.

To all whom it may concern:

Be it known that I, LUDWIG GLASER, a subject of the Grand Duke of Sachsen-Coburg-Gotha, residing at Pankow, Germany, have invented certain new and useful Improvements in Methods of Connecting Incandescent Lamp-Filaments with Metallic Current-Supply Wires, of which the following is a specification.

There are various methods of intimately connecting incandescent filaments with electric current supply wires. For example, this may be accomplished by melting the end of the metal supply wire and then introducing the filament into the molten sphere and allowing the metal to cool. Such an operation can only be carried on in a vessel which entirely excludes the air; the process is, thereby, made somewhat elaborate and costly. If it should be attempted to melt the current supply wire by external heat, as by gas, the inevitable result would be oxidation of the metal supply wire and combustion of the lighting filament.

By the following method, these difficulties can be obviated and a rapid, certain and cheap connection of the lighting filament with the supply wires may be obtained. A current of high strength, for example, alternating current, is passed for an instant through the supply wire, the current being taken from a system and transformed to a high current strength of, for example, 100 to 1000 amperes at a potential of say one or one-half volt. The wire immediately becomes red hot (it may even become melted) but immediately cools again when the current is suddenly interrupted. The duration of the current flow is so small that the oxygen of the atmospheric air does not perceptibly act on the filament or on the metal of the supply wire. Preferably a certain mechanical pressure is combined with the effect of the electric current of high strength, in order to connect the softened supply wire intimately with the lighting filament by covering it and pressing it in.

An arrangement suitable for carrying out the above-mentioned method is illustrated diagrammatically in the accompanying drawing.

One leg 1 of a carbon filament or a metallic filament of high fusion metal is inserted in an eye 2 of a nickel wire of about .3 to .5 mm. diameter. Perpendicularly to the current supply wire there are applied, at the point of connection with the lighting filament, two copper blocks 3 and 4 of about 1 sq. c. m. area, which have a slight enlargement on the one side. By moving a lever 5, a light pressure is exerted on the point of union and at the same time the electric circuit from a transformer 6 is closed. This transformer is designed to give a secondary current of several hundred amperes at a low voltage. Since the connecting point offers the greatest resistance to the flow of current, the eye 2 immediately becomes warm, the metal softens, and is pressed together by the light pressure which acts on the copper plates. The softened metal is thereby caused to intimately and homogeneously surround the lighting filament and establish a good electrical connection therewith. The transformer circuit is only closed about $\frac{1}{10}$ and to $\frac{1}{3}$ of a second and immediately thereafter is again opened. Experiments have shown that oxidizing effects are not perceptible.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. The process of joining a lamp filament to a metallic supply conductor which consists in softening the supply conductor by the passage of an electric current therethrough and applying pressure to bring the filament and conductor into contact.

2. The process of joining a lamp filament to a metallic supply conductor which consists in softening the supply conductor in the region of its contemplated junction with the filament by the passage of an electric current therethrough and pressing the supply conductor into contact with the filament.

3. The process of joining a lamp filament to a metallic supply conductor which consists in momentarily passing a suitable current through the supply conductor in the region of its junction with the filament and simultaneously causing the conductor and filament to be pressed against each other.

4. The process of uniting a lamp filament to a metallic supply conductor which consists in placing the filament in an eye of said conductor, softening the eye by the passage of a strong current therethrough, and applying pressure to bring the eye and filament into intimate contact.

5. The process of joining a lamp filament

and a metallic conductor which consists in placing the filament between opposite portions of said conductor, softening said portions by the passage of strong current therethrough, and applying pressure to bring said portions of the conductor into intimate contact with the filament.

In witness whereof, I have hereunto set my hand this 27th day of March, 1907.

LUDWIG GLASER.

Witnesses:
HANS GALLUS,
GUSTAV MATTLÜS.